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LONDON:

PRINTED FOR THE SOCIETY BY RICHARD CLAY AND SONS, LIMITED,
LONDON AND BUNGAY.

SOLD AT THE SOCIETY'S ROOMS, 11, CHANDOS STREET,
CAVENDISH SQUARE, W.,

AND BY LONGMANS, GREEN, AND CO.,
PATERNOSTER ROW, E.C.; AND NEW YORK.

1900–1901.

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## DATES OF PUBLICATION IN PARTS.

| | | | | | | |
|---|---|---|---|---|---|---|
| Part I. | (TRANS., | pp. 1–182 | ———— | ) was published | 26th April, | 1900. |
| „ II. | ( „ | 183–402, | PROC., i–viii) | | „ 14th July, | „ |
| „ III. | ( „ | 403–452, | ———— | ) | „ 22nd Oct., | „ |
| „ IV. | ( „ | 453–698, | „ ix–xxiv) | | „ 24th Dec., | „ |
| „ V. | ( ———— | ———— | „ xxv–lxxii) | | „ 19th April, | 1901. |

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* Owing to unforeseen difficulties the publication of this plate is postponed to a future occasion.

## ERRATA.

### TRANSACTIONS.

Pages 411, 417, 422, for *ovæ* read *ova*
Page 419, line 10, *for* ovæ of *read* ova or
Page 477, line 26, *for* VENEZUELA *read* AMAZONS

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1894 GRIMSHAW, Percy H., *Natural History Department, Museum of Science and Art, Edinburgh.*
1900 GROOM, Prof. Percy, M.A., F.L.S., *Royal Indian Engineering College, Cooper's Hill, Staines.*
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1889 HARRISON, John, 7, *Gawber-road. Barnsley.*
1892 HEADLY, Charles Burnard, *Two Elms, Alexandra-road, Stoneygate, Leicester.*
1881 HENRY, George, 38, *Wellington-square, Hastings.*
1898 HERON, Francis A., B.A., *British Museum (Natural History), Cromwell-road*, S.W.
1888 HIGGS, Martin Stanger, F.C.S., F.G.S., *Sheba G. M. Co., Eureka City, Transvaal.*
1891 HILL, Henry Ainslie, 9, *Addison Mansions, Kensington*, W.
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1888 HODSON, The Rev. J. H., B.A., B.D., 5, *Hurle-road, Clifton, Bristol.*
1887 HOLLAND, The Rev. W. J., D.D., Ph.D., *5th Avenue, Pittsburg, Penn., U.S.A.*
1898 HOLMAN-HUNT, C. B., *Meddecombra, Watagoda, Ceylon.*
1897 HORNE, Arthur, *Ugie Bank, Aberdeen.*
1876 † HORNIMAN, Fredk. John, M.P., F.L.S., F.Z.S., &c., *Surrey Mount, Forest Hill*, S.E.
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1893 IRBY, Lieutenant-Colonel Leonard Howard Loyd, F.L.S., F.Z.S., 14, *Cornwall-terrace, Regent's Park,* N.W.
1891 ISABELL, The Rev. John, c/o *Rev. Charles Courteney, St. Peter's Vicarage, Tunbridge Wells.*

1886 JACOBY, Martin, 7, *Hemstall-road, West Hampstead,* N.W.
1892 JAFFREY, Francis, M.R.C.S., L.R.C.P., 8, *Queen's-ride, Barnes,* S.W.
1869 JANSON, Oliver E., *Cestria, Claremont-road, Highgate,* N ; and 44, *Great Russell-street, Bloomsbury,* W.C.
1898 JANSON, Oliver J., *Cestria, Claremont-road, Highgate,* N.
1886 JENNER, James Herbert Augustus, *Eastgate-house, Lewes.*
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1884 KANE, W. F. de Vismes, M.A., M.R.I.A., *Drumleaske House, Monaghan.*
1884 KAPPEL, A. W., F.L.S., *Hilden,* 18, *Sutton Court-road, Chiswick,* W.
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1884 KEAYS, F. Lovell, F.L.S., 26, *Charles-street, St. James's,* S.W.
1890 KENRICK, G. H., *Whetstone, Somerset-road, Edgbaston, Birmingham.*
1898 KERSHAW, J. A., *Morton Banks, Lewisham-road, Windsor, Melbourne, Victoria.*
1900 KEYS, James H., 6, *Seymour-terrace, Lipson, Plymouth.*
1889 KING, J. J. F. X., Lecturer on Economic Entomology at the West of Scotland Agricultural College, 1, *Athole Gardens-terrace, Kelvinside, Glasgow.*
1861 KIRBY, William F., F.L.S., *Hilden,* 18, *Sutton Court-road, Chiswick,* W.
1893 KIRKALDY, George Willis, *St. Abbs, Worple-road, Wimbledon,* S.W.
1889 KLAPÁLEK, Professor Franz, *Karlín* 263, *Prague, Bohemia.*
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1893 LOWER, Oswald B., *Bleak House, Park Side, Adelaide, South Australia.*
1898 LUCAS, W. J., B.A., 28, *Knight's Park, Kingston-on-Thames.*
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1889 NEVINSON, Basil George, M.A., F.Z.S., 3, *Tedworth-square, Chelsea*, S.W.
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1851 PRESTON, The Rev. Thomas Arthur, M.A., F.L.S., *Thurcaston Rectory, Leicester.*
1878 PRICE, David, 48, *West-street, Horsham.*
1893 PROUT, Louis Beethoven, 246, *Richmond-road, Dalston,* N.E.

1898 QUAIL, Ambrose, *Palmerston North, New Zealand.*

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1890 RENDLESHAM, The Right Honble. Lord, *Rendlesham Hall, Woodbridge.*
1898 REUTER, Professor Enzio, *Helsingfors, Finland.*
1886 RHODES, John, 360, *Blackburn-road, Accrington.*
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1886 ROSE, Arthur J., 37, *Church Crescent, Muswell Hill*, N.

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1899 RYLES, William E., B.A., 11, *Waverley Mount, Nottingham.*

1886 SALWEY, Reginald E., *Sungate, Hook-road, Kingston-on-Thames.*

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1861 † SAUNDERS, G. S., 20, *Dents-road, Wandsworth Common*, S.W.

1886 SAUNDERS, Prof. Wm., *Central Experimental Farm, Ottawa, Canada.*

1881 SCOLLICK, A. J., *Boldrewood, Ditton Hill, Surbiton, Kingston-on-Thames.*

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1862 SHARP, David, M.A., M.B., F.R.S., F.L.S., F.Z.S., *Hawthorndene, Hills-road, Cambridge* ; and *University Museum of Zoology and Comparative Anatomy, Cambridge.*

1883 SHAW, A. Eland, M.R.C.S., *Althorpe, Doncaster.*

1883 † SHELLEY, Capt. George Ernest, F.G.S., F.Z.S., 10, *Thurloe-square*, S.W.

1900 † SHEPHEARD-WALWYN, H. W., M.A., *Glensyde, Ridborough*, near *Tunbridge Wells.*

1887 SICH, Alfred, *Brentwood*, 65, *Barrowgate-road, Chiswick*, W.

1887 SIDGWICK, Arthur, M.A., Fellow of Corpus Christi College, Oxford, 64, *Woodstock-road, Oxford.*

1895 SMITH, W. W., *Ashburton, Canterbury, New Zealand.*

1898 SOPP, Erasmus John Burgess, F.R.Met.S., *Saxholme, Hoylake, S.O., Cheshire.*

1885 SOUTH, Richard, 96, *Drakefield-road, Upper Tooting*, S.W.

1897 SPARKE, E. G. J., B.A., 1, *Christchurch-Villas, Tooting Bec-road*, S.W.

1889 STANDEN, Richard S., F.L.S., *Thorpe-hall, near Colchester.*

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1897 STEBBING, E. P., Indian Forest Service, c/o King, Hamilton and Co., *Calcutta*.
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1895 STUDD, E. F., M.A., B.C.L., *Oxton, Exeter*.
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1884 SWINHOE, Colonel Charles, M.A., F.L.S., F.Z.S., *Avenue House, Oxford*.
1894 SWINHOE, Ernest, *Avenue House, Oxford*.
1876 SWINTON, A. H., c/o General Callender, *Vineyard, Totnes*.

1893 TAYLOR, Charles B., *Rae-street, Rae Town, Kingston, Jamaica*.
1892 TAYLOR, The Rev. George W., F.R.S. (Canada), *St. Alban's Rectory, Nanaimo, British Columbia*.
1886 THEOBALD, F. V., M.A., Lecturer in Economic Entomology and Zoology to the South Eastern Agricultural College, *Wye Court, near Ashford, Kent*.
1892 THORNLEY, the Rev. A., M.A., F.L.S., *South Leverton Vicarage, Lincoln*.
1897 TOMLIN, B., *West Lodge, Stancliffe Hall, Matlock*.
1893 TOWNSEND, Professor C. H. Tyler, *Las Cruces, New Mexico, U.S.A.*
1859 † TRIMEN, Roland, M.A., F.R.S., F.L.S., 22, *Upper Gloucester-place*, N.W.
1895 TUNALEY, Henry, 30, *Fairmont-road, Brixton Hill*, S.W.
1897 TUNSTALL, Wilmot, *Brook House, Meltham, Huddersfield*.
1898 TURNER, Dr. A. J., *Portland-road, East Grinstead, Sussex*.
1893 TURNER, Henry Jerome, 13, *Drakefell-road, St. Catharine's Park, Hatcham*, S.E.
1894 TURNER, Thomas, *Cullompton*.
1886 TUTT, J. W., *Rayleigh Villa, Westcombe Hill*, S.E.

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1900 URWICK, W. F., 34, *Great Tower-street*, E.C.

1899 VARTY, H. A., 61, *Queen's-road, Aberdeen*.
1866 VERRALL, George Henry, PRESIDENT, *Sussex Lodge, Newmarket*.
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1876 WAKEFIELD, Charles Marcus, F.L.S., *Belmont, Uxbridge.*
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Acloque (A.). Faune de France. Coléoptères. 8vo, Paris, 1896.
*Purchased.*

Aurivillius (C.). Nordens Fjärilar, Handbok i Sveriges, Norges, Danmarks och Finlands *Macrolepidoptera*. 4to, Stockholm, 1888—1891.
*The Author.*

Neue Nymphaliden aus dem Congogebiete.
[Öfversigt Kongl. Vetenskaps-Akademiens Förh. 1897. No. 5.]
*The Author.*

Rhopalocera Æthiopica, die Tagfalter des Æthiopischen Faunengebietes. 4to, Stockholm, 1898. *The Author.*

Barrett (C. G.). Lepidoptera of the British Islands. Vol. VI. 4to, London, 1900. *The Publishers.*

Berg (C.). Sobre algunos Anisomórfidos chileno-argentinos.

Notas Hemipterológicas.

El género *Rhyephenes*, Schönh., en la Républica Argentina.
Los Mantispidos de la Républica Argentina.

Notice sur les espèces du genre *Alurnus*, F., appartenant à la Faune Argentine.

*Pleminia argentina*, un nuevo Seudofilido.

Apuntes sobre dos especies del género *Odynerus* de la Tierra del Fuego.

Datos sobre algunos crustáceos nuevos para la fauna argentina.
[Com. del Mus. Nac. de Buenos Aires, 1899, 1900.]

Nova Hemiptera faunarum Argentinæ et Uruguayensis.
[An. Soc. Cient. Argent. XXXII.—XXXIV. (1891, 92).]
*The Author.*

Biolley (P.). Orthopteros de Costa Rica.
[Tom. del Informe del Mus. Nac., San José, 1899—1900.]
*The Author.*

Bruner (L.). [See Godman (F. D.). Biologia Centrali-Americana.]

Burr (Malcolm). Essai sur les Eumasticides.
[Anal. de la Soc. Esp. de Hist. Nat. tomo 28.]

Forficules exotiques du musée royal d'histoire naturelle de Bruxelles.
[Ann. de la Soc. Entom. de Belgique, 1900.] *The Author.*

Cameron (P.). [See Godman (F. D.). Biologia Centrali-Americana.]

Carr (J. W.). [See Thornley (A.).]

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CHAMPION (G. C.). [See GODMAN (F. D.). Biologia Centrali-Americana.]

CHITTENDEN (F. H.). Insects injurious to Beans and Peas.
[Yearbook of Dept. Agric., U.S., 1898.] *The Author.*

COQUILLETT (D. W.). Report on a collection of Dipterous Insects from Puerto Rico. 8vo, Washington, 1900. *The Author.*

CUVIER (BARON). The Animal Kingdom. Crustacea, Arachnides and Insecta, by M. LATREILLE. 4 vols. 8vo, London, 1833—37. *Purchased.*

DISTANT (W. L.). [See GODMAN (F. D.). Biologia Centrali-Americana.]

DONCKIER DE DONCEEL (H.). Catalogue Systématique des Hispides.
[Ann. Soc. Ent. France, 1899.] *The Author.*

DONISTHORPE (H.). *Quedius Kraatzii*, Bris. (*plancus*, Er., teste Ganglbauer): a species new to Britain.
[Ent. Record, 1898.]

Notes on the British Longicornes.
[Ent. Record, 1898.]

Notes on the additions to the British List of Coleoptera since Canon Fowler's "Coleoptera of the British Isles."
[Ent. Record, 1899.]

The guests of Ants and Termites, by E. Wasmann, S. J.; translated by H. Donisthorpe.
[Ent. Record, 1900.]

A few notes on Myrmecophilous Coleoptera.
[Ent. Record, 1900.] *The Author.*

DRUCE (Herbert). Descriptions of some new Genera and Species of Heterocera from Tropical South America.
[Ann. and Mag. N. H. (7), V., 1900.]

Descriptions of some new Species of Heterocera from Tropical South America.
[Ann. and Mag. N. H. (7), VI., 1900.]

On a collection of Insects and Arachnids made in 1895 and 1897 by Mr. C. V. A. Peel in Somaliland. Lepidoptera Heterocera.
[Proc. Zool. Soc. Lond., 1900.] *The Author.*

[See GODMAN (F. D.). Biologia Centrali-Americana.]

FAVRE (E.). Faune des Macro-Lepidoptères du Valais et des régions limitrophes. 8vo, Schaffhausen, 1899. *Purchased.*

FELT (E. P.). Insects injurious to Forest Trees.
[4th Ann. Report to Commissrs. of Fisheries, Game and Forests of the State of New York.]

15th Report of the State Entomologist on Injurious and other Insects of the State of New York, 1899. 8vo, Albany, 1900.
*The Author.*

FOREL (A.) Un nouveau genre et une nouvelle espèce de Myrmicide.
[Ann. Soc. Ent. Belgique, XLIV.]

Ponerinæ et Dorylinæ d'Australie.
[Ann. Soc. Ent. Belgique, XLIV.] *The Author.*
[See GODMAN (F. D.). Biologia Centrali-Americana.]

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FOWLER (W. W.). [See GODMAN (F. D.). Biologia Centrali-Americana.]

GILES (MAJOR G. M.). A Handbook of the Gnats or Mosquitoes, giving the anatomy and life history of the Culicidæ. 8vo, London, 1900.
*Purchased.*

GODMAN (F. D.). Biologia Centrali-Americana.

*Araneidea*, by O. and F. O. P.-Cambridge.

*Insecta*, by L. Bruner, P. Cameron, G. C. Champion, W. L. Distant, H. Druce, A. Forel, W. W. Fowler, F. D. Godman, A. P. Morse, H. de Saussure, D. Sharp, S. W. Williston, and F. M. van der Wulp. Parts CLIII.—CLX. *The Editor.*

GROTE (A. Radcliffe). The descent of the Pierids.
[Proc. Am. Phil. Soc. XXXIX.] *The Author.*

HAMMOND (A. R.). [See MIALL (L. C.).]

HAMPSON (Sir G. F.). Catalogue of the Lepidoptera Phalænæ in the British Museum. Vol. II. Text and Plates. 8vo, London, 1900.
*The Trustees of the Museum.*

HOUGH (G. de N.). Studies in Diptera Cyclorhapha—(1) The Pipunculidæ of the United States.
[Proc. Boston Soc. N. H. XXIX.]
*The Boston Soc. N. History.*

JACOBY (M.). Descriptions of the new Species of Phytophagous Coleoptera obtained by Dr. Dohrn in Sumatra.
[Stett. Ent. Zeit., 1899.]

New Species of Indian Phytophaga, principally from Mandar, in Bengal.
[Mém. Soc. Ent. Belg., VII.]

On new Genera and Species of Phytophagous Coleoptera from South and Central Africa.
[Proc. Zool. Soc. Lond., 1900.] *The Author.*

KRÜGER (Leopold). Insektenwanderungen zwischen Deutschland und den Vereinigten Staaten von Nordamerika und ihre wirtschaftliche Bedeutung.
[Stett. Ent. Zeit., 1899.] *The Author.*

LAMEERE (Aug.). Faune de Belgique. Tome II. 8vo, Bruxelles, 1900.
*The Author.*

LEFROY (H. Maxwell). Hints and suggestions for the treatment of the Moth Borer in Sugar Cane.
[Imp. Dept. Agric. for the West Indies, 1900.]
*The Dept. Agric. W. Indies.*

LOWE (V. H.). The forest tent-caterpillar.
[Bull. No. 159. N. Y. Agric. Expt. Station, 1899.]

MARCHAL (Paul). Sur les *Chrysomphalus ficus* et *minor*.
[Bull. Soc. Ent. France, 1899.] *The Author.*

MATTHEWS (A.). A Monograph of the Coleopterous Families *Corylophidæ* and *Sphæriidæ*. Edited by P. B. Mason. 4to, London, 1899.

Trichopterygia illustrata et descripta. Supplement. Edited by P. B. Mason. 4to, London, 1900. *The Editor.*

MELICHAR (L.). Monographie der Ricaniiden (*Homoptera*).
[Ann. des k. k. Nat. Hofmuseum, XIII.] *The Author.*

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MEYRICK (E.). Fauna Hawaiiensis. Macrolepidoptera. Vol. I., Pt. 2. 4to, Cambridge, 1899. *The Author.*

MIALL (L. C.) and HAMMOND (A. R.). The Structure and Life History of the Harlequin Fly (*Chironomus*). 8vo, Oxford, 1900. *The Delegates of the Clarendon Press.*

MORLEY (Claude). On *Sphegophaga vesparum*, Curt. [Ent. Monthly Mag. Ser. 2, XI.] *The Author.*

MORSE (A. P.). [See GODMAN (F. D.). Biologia Centrali-Americana.]

NEEDHAM (J. G.). Directions for collecting and rearing Dragon Flies, Stone Flies, and May Flies. [U. S. Nat. Mus. Bull. No. 39.] *The Museum.*

NEWSTEAD (R.). The Injurious Scale Insects and Mealy Bugs of the British Isles. 8vo, London, 1900. [Journ. Roy. Hortic. Soc. XXIII.] *The Author.*

ORMEROD (Miss E. A.). Flies injurious to stock, with special observations on Ox Warble, or Bot Fly. 8vo, London, 1900. *The Authoress.*

PAGENSTECHER (A.). Die Lepidoptereufauna des Bismarck-Archipels. Theil I. Die Tagfalter. 4to, Stuttgart, 1899. *The Author.*

PIEPERS (M. C.). The Evolution of Colour in Lepidoptera. [Notes Leyden Museum, XXII.] *The Author.*

REUTER (E.). The systematic position of *Pseudopontia*. [Ent. Record, 1899.]

Über die Weissährigkeit der Wiesengräser in Finland. 8vo, Helsingfors, 1900. [Acta Soc. pro Fauna et Flora Fennicæ, XIX.] *The Author.*

SAUSSURE (H. de). Hymenoptera-Vespidæ. 4to, Frankfurt-a-M., 1900. *The Author.* [See GODMAN (F. D.). Biologia Centrali-Americana.]

SCUDDER (S. H.). Catalogue of the Described Orthoptera of the United States and Canada. [Proc. Davenport Acad. Nat. Sc., VIII.]

The Species of the Orthopteran genus *Derotmema*. [Proc. Amer. Acad. Arts and Sciences, XXXI.] *The Author.*

SHARP (D.). [See GODMAN (F. D.). Biologia Centrali-Americana.]

SMITH (J. B.). A Hundred new Moths of the Family *Noctuidæ*. [Proc. U. S. Nat. Mus., XXII.] *The Museum.*

SURVEYOR (N. F.). Parasitic invasion of eggs of common Cockroach. [Journ. Bombay Med. and Phys. Soc., 1900.] *The Author.*

SWINHOE (C.). Catalogue of the Eastern and Australian *Lepidoptera Heterocera* in the Collection of the Oxford University Museum. Pt. II. Oxford, 1900. *The Delegates of the Clarendon Press.*

THEOBALD (F. V.). Report on Insect Pests, etc., for 1899. [Journ. S. E. Agric. Coll., Wye, 1899.] *The Author.*

THORNLEY (A.). Hymenoptera Sessiliventres of the counties of Nottinghamshire and Lincolnshire. A preliminary list. [The Naturalist, 1899.] *The Author.*

——— and CARR (J. W.). Hymenoptera Aculeata and Tubulifera of Nottinghamshire. [The Naturalist, 1900.] *The Authors.*

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U. S. Dept. Agriculture (Division of Entomology).

Bulletin No. 20. Proceedings of the Eleventh Annual Meeting of the Association of Economic Entomologists (1899).

No. 21. Preliminary Report on the Insect Enemies of Forests in the North-West. By A. D. Hopkins.

No. 22. Some Miscellaneous Results of the work of the Division of Entomology (IV). By L. O. Howard (1900).

No. 24. A List of Works on N. American Entomology. By N. Banks (1900).

No. 25. Notes on the Mosquitos of the United States By L. O. Howard (1900).

No. 26. Proceedings of the Twelfth Annual Meeting of the Association of Economic Entomologists (1900).

Technical Series. No. 8. Contributions towards a Monograph of the American *Aleurodidæ*. By A. L. Quaintance (1900).

The Red Spiders of the United States. By N. Banks (1900).

Farmer's Bulletins. No. 120. The principal Insects affecting the Tobacco Plant. By L. O. Howard (1900).

Williston (S. W.). [See Godman (F. D.). Biologia Centrali-Americana.]

Wulp (F. M. van der). [See Godman (F. D.). Biologia Centrali-Americana.]

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## *Periodicals and Publications of Societies.*

### AFRICA.

CAPE TOWN. South African Philosophical Society. Transactions, Vol. X. *The Society.*

South African Museum. Annals. Vol. I., Pt. 3; Vol. III., Pts. 1–3. *Trustees S. Afr. Mus.*

### AMERICA (NORTH).

#### CANADA.

HALIFAX. Nova Scotian Institute of Science. Proceedings and Transactions. Vol. X., Pt. 1. *The Institute.*

LONDON, ONTARIO. The Canadian Entomologist. Vol. XXXII., 1899. *By Exchange.*

MONTREAL. Royal Society of Canada. Proceedings and Transactions. Ser. 2, Vol. V., 1899. *The Society.*

ONTARIO. Ent. Soc. of Ontario. 30th Report, 1899. *The Society.*

#### UNITED STATES.

DAVENPORT. Proc. Acad. Nat. Sciences. Vol. VII. *The Society.*

NEW YORK. N.Y. Entomological Society. Journal, 1900. *Purchased.*
N.Y. State Museum. Report, 1897. *The Museum.*

PHILADELPHIA. Academy of Natural Sciences of Philadelphia. Proceedings, 1900. *By Exchange.*

Entomological News, 1900. Proceedings of the Entomological Section. Vol. XI. *By Exchange.*

American Entomological Society. Transactions, 1900. *By Exchange.*

WASHINGTON. Entomological Society. Proceedings, 1900. *Purchased.*
U.S. National Museum. Proceedings, Vol. XXI. *The Museum.*

### WEST INDIES.

JAMAICA. West Indian Bulletin. Vol. I., No. 2–4. *The Dept. of Agric.*

### AMERICA (SOUTH).

#### BRAZIL.

PARA. Boletim do Museu. Vol. III. *The Museum.*

### ASIA.

#### INDIA.

BOMBAY. Natural History Society. Journal. Vol. XII., No. 5; Vol. XIII., No. 1. *By Exchange.*

CALCUTTA. Indian Museum Notes. Vol. V. *The Trustees.*

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## AUSTRALASIA.

ADELAIDE. Royal Society of South Australia. Transactions. Vol. XXIII.
Memoirs, Vol. I., Pt. 1. *By Exchange.*

HOBART. Royal Society of Tasmania. Proceedings, 1898-99.

PERTH. Journal Agricultural Department of West Australia. Vols. I., II.
*The Society.*

SYDNEY. The Agricultural Gazette of New South Wales, 1900.
*Agric. Dept.*

Linnean Society of New South Wales. Proceedings, 1900.
*By Exchange.*

## NEW ZEALAND.

WELLINGTON. New Zealand Institute. Transactions and Proceedings. 1899.
*The Institute.*

## EUROPE.

### AUSTRIA-HUNGARY.

BRÜNN. Verband. der naturf. Vereines in Brunn. Bd. XXXVII. 1898.
*By Exchange.*

BUDAPEST. Termés zetrajzi Füzetek, kiadja a Magyar nemzeti Múzeum.
Vol. XXIII. *By Exchange.*

VIENNA. K.-k. zoologische-botanische Verein (Gesellschaft) in Wien.
Verhandlungen. Band L., 1900. *By Exchange.*

Wiener entomologische Zeitung, 1900. *By Purchase.*

### BELGIUM.

BRUSSELS. Société Entomologique de Belgique. Annales. 1900.
Mémoires, Vol. VII. *By Exchange.*

### FRANCE.

CAEN. Société Française d'Entomologie. Revue. Tome XIX., 1900.
*By Purchase.*

Soc. Linnéenne de Normandie. Bulletin. 1898. *By Exchange.*

CHATEAUROUX. Le Frélon, 1900. *By Purchase.*

LYON. Soc. Linnéenne de Lyon. Annales. 1899. *By Exchange.*

Paris. L'Abeille, 1900. *By Purchase.*

Soc. Entom. de France. Ann. et Bulletin. 1898.
*By Exchange.*

TOULOUSE. Bulletin de la soc. d'Hist. Nat. de Toulouse. Tomes XXIX.—
XXXII. *By Exchange.*

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## GERMANY.

BERLIN. Entomologischer Verein in Berlin. Berliner entomologische Zeitschrift. 1900. *By Exchange.*

Deutsche entomologische Gesellschaft. Deutsche entomologische Zeitschrift. 1900. Heft 1. *By Exchange.*

DRESDEN. "Iris." Deutsche entomologische Zeitschrift. 1900. *By Exchange.*

FRANKFORT. Senckenbergische naturforschende Gesellschaft. Bericht. 1899. *By Exchange.*

HALLE. Abhandlungen der Kaiserlichen Leopoldinisch Carolinischen Deutschen Akademie der Naturforscher. Bd. LXXIV.

STETTIN. Entomologischer Verein. Entomologische Zeitung. Jahrg. 1900. *By Exchange.*

WIESBADEN. Nassauischer Verein für Naturkunde. Jahrbücher. Jahrg. LIII. *By Exchange.*

## GREAT BRITAIN AND IRELAND.

BUCKHURST HILL. Essex Naturalist. 1899. *The Essex Field Club.*

DUBLIN. Roy. Dublin Society. Transactions and Proceedings. 1899. *By Exchange.*

GLASGOW. Trans. Nat. Hist. Soc. 1899. *By Exchange.*

LEEDS. Naturalist (The). 1900. *The Yorks. Nat. Union.*

LONDON. Annals and Magazine of Natural History. 1900. *By Purchase.*

Athenæum. *The Publishers.*

City of London Entomological and Natural History Society. Transactions for 1899. *The Society.*

Entomologist (The). 1900. *R South.*

Entomologist's Monthly Magazine. 1900. *The Editors.*

Linnean Society of London. Transactions, Vol. VII., Pts. 9—11. Journal. 1900. *By Exchange.*

Linnean Society of London. Proceedings. 1900.

Nature. 1900. *The Publishers.*

Nature Notes. 1900. *The Publishers.*

Quekett Microscopical Club. Journal. 1900. *The Club.*

Royal Agricultural Society. Journal. 3rd Ser., Vol. XI. *The Society.*

Royal Microscopical Society. Journal. 1900. *By Exchange.*

Royal Society. Proceedings. Nos. 422—438. *By Exchange.*

South London Entomological and N. H. Society. Proceedings. 1899. *The Society.*

Year Book of Scientific Societies. 1900. *By Purchase.*

Zoological Record for 1899. *By Purchase.*

Zoological Society. Proceedings, 1900. Transactions, Vol. XV., Pt. 2—4. *By Exchange.*

Zoologist (The). 1900. *The Publisher.*

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## HOLLAND.

THE HAGUE. Tijdschrift voor Entomologie. Jahr. 1900. *By Exchange.*

## ITALY.

FLORENCE. Societa Entomologica Italiana. Bullettino, XXXI. 1899. *By Exchange.*

## RUSSIA.

MOSCOW. Société Impériale des Naturalistes de Moscou. Bulletin. 1899. *By Exchange.*

ST. PETERSBURG. Societas Entomologicæ Rossicæ. Horæ. Tome XXXIII. *By Exchange.*

Annuaire du musée zoologique de l'académie impériale des sciences de St. Petersburg. *Mr. F. D. Godman.*

## SWEDEN.

STOCKHOLM. Entomologisk Tidskrift. 1899. *By Exchange.*

## SWITZERLAND.

GENEVA. Société de Physique et d'Histoire Naturelle. Mémoires. Vol. XXXIII. Pt. I. *By Exchange.*

SCHAFFHAUSEN. Schweizerische entomologische Gesellschaft. Mittheilungen. Bd. X., Hft. 6—7. *By Exchange.*

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# I. *Descriptions of new species of Oriental* Rhyacophilæ.

By KENNETH J. MORTON, F.E.S.

[Read December 6th, 1899.]

PLATE I.

THE following descriptions of Oriental *Rhyacophilæ* are based on material in the rich collection of Mr. R. McLachlan. The insects are principally from India, and as far as that region is concerned, the descriptions practically break new ground. Unfortunately no biological notes are available, the insects being, almost entirely, captures by native collectors. Two new species from Japan are included.

What the water systems of the great mountain ranges in the Indian Region (and the same may be said of the Asiatic Continent as a whole) will eventually produce in the way of *Rhyacophilæ*, it is impossible to conjecture; but if the number of species is in proportions anything like those found in Europe, it will be enormous.

In Europe, there is a certain amount of analogy between this genus and the Rhopalocerous genus *Erebia*. Both are characteristic of mountainous regions; and the species are so numerous and so closely allied that even expert



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collectors can hardly attempt to discriminate between them in the field.

In using as the principal criterion for specific determinations, the genital appendages, I have followed the best traditions of systematic work amongst the *Trichoptera*. Experience proves that figures of these parts are indispensably necessary if a reference to types is to be avoided. With a fair preliminary knowledge of the subject and moderate caution, such figures, even when little more than diagrams, can be used with the most satisfactory results. It is to be regretted that many North American *Trichoptera* are being described without due regard to these parts, although their authors say the final determination of species must rest on sexual characters. They thus admit that they have not attempted to make their descriptions sufficient, an admission that does not require further comment.

Although the majority of the species now described belong to groups which have no near exponents amongst the European species, and although some of the species will be set apart ultimately in other genera, little would be gained in the meantime by splitting up the great genus *Rhyacophila*. Acting on the recommendation of Mr. McLachlan I retain all in the genus *Rhyacophila*, a course which, at present, my own views quite approve. I think all the species now made known, will fall under the short diagnosis given in the "Revision and Synopsis of European Trichoptera," p. 434, although all will perhaps not be found to agree in every particular with the details given on pp. 432–3 of the same work. I have accordingly placed in the front of each description, some of the more important characters which may be found useful in establishing groups or even genera hereafter.

### 1. *Rhyacophila lanceolata*, n. sp.

Ventral abdominal tooth obsolete or absent in both sexes. Ninth segment in the ♂ continued broadly ventrally. No median process; lateral lobes, very large, contiguous.

Wings elongate, apex sub-falcate; radius furcate at apex; apical fork No. 1 extending inwardly further than No. 2. Costal hairs simple.

Fore wings greyish-yellow or stramineous; anterior part pale, with a few elongate spots on the nervures; costal area faintly irrorated; a strongly-marked brown dot on the costal margin just

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before the apex. Apical cellules Nos. 2 and 3 fuscous, the band so formed being continued obliquely towards the inner marginal area; this band is followed by a pale, strongly outstanding, oblique band, then follow another fuscous oblique band, a paler oblique band marked with faint irrorations, and finally a yellowish marginal band. Inner marginal area closely irrorated with dark fuscous; post-costa densely pubescent and mostly black as are also the veins converging at the arculus. Hind wings pale, almost hyaline, slightly yellowish at the apex. Antennæ pale yellow; head pronotum and legs (and the anal parts of the ♂) yellowish; meso and meta-nota brownish; abdomen dark fuscous.

In the ♂ the inferior appendages are large elongate, nearly horizontal; the basal joint very long and, when viewed from the side, slightly excised at the apex, the small somewhat rounded second joint being placed in the excision. The large approximated lateral lobes are also horizontal in their proximal portion which is concave; distally they are abruptly narrowed and turned downwards between the inferior appendages, and they terminate in long lanceolate processes which are provided with a number of smaller somewhat similar processes.

In the ♀ the ovipositor is short and stout.

Expanse 28 to 37·5 mm., the ♀ the larger.

Khasia Hills, evidently common.

A ♂ and ♀ from Phadong, Sikkim, are also referred to this species in the meantime, although the second joint of the inferior appendages seems narrower and the lanceolate apex of the lateral lobes appears to be shorter. This however may only be the result of drying. This species is a very striking one on account of the oblique pale markings, which taken in conjunction with the anal parts will no doubt in time lead to its being separated generically from the more typical forms of *Rhyacophila*.

### 2. *Rhyacophila japonica*, n. sp.

Ventral abdominal teeth in both sexes obsolete or absent. Ninth segment in the ♂ continued broadly ventrally: no median process above.

Apex of wings sub-angulate; rather more pointed in the ♀. Apical fork No. 1 extending further inwards than No. 2 in the fore wings, these forks sub-equal in the hind wings; radius furcate at the end. Costal hairs simple.

Fore wings yellowish-grey with five more or less irregular interrupted darker bands; an apical blotch and dots at the termination

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of the apical nervures also darker; the interneural spaces where pale with dots arranged like striæ; towards the inner marginal region, the dots form irrorations; pterostigma only slightly marked (all the markings more intense in the ♀). Posterior wings paler, yellowish, especially at the apex.

In the ♂ the inferior appendages are relatively short; the basal joint very broad when viewed from the side, ascendant, at about half its length ventrally, a large abruptly inturned tooth occurs preceded by a slightly-marked angle; the second joint short, when viewed from the side, from its being much incurved; the apex in some views having the appearance of being slightly emarginate. The lateral lobes are united at the base, long, finger shaped, slightly angulate on their inner margin and terminating in a hooked point.

In the ♀ the eighth dorsal segment has the posterior margin excised, the angles being strongly produced. In the type the ovipositor is short. The parts are however not in very good condition.

Expanse ♂ 45·5 mm., ♀ 52 mm.

One of each sex from Japan (Pryer); a large handsome insect.

### 3. *Rhyacophila tecta*, n. sp.

Ninth segment apparently continuous ventrally, dorsal portion not visible in type being probably abnormally retracted in drying; no ventral teeth visible. Median process long somewhat roof-shaped and sub-acute.

Wings with apex sub-acute; apical forks Nos. 1 and 2 sub-equal in the fore wings; radius not distinctly furcate at apex. Membrane smoky with brownish pubescence, neuration fuscous. Costal hairs simple.

Antennæ blackish fuscous, faintly annulated with paler at the joints; legs fuscescent.

In the ♂ the inferior appendages have the basal joint elongate, the upper and lower margins being sub-parallel, apical margin oblique; the second joint is short, its upper and lower edges rounded, apical edge emarginate with several rows of black short setæ internally.

Expanse 18 mm.

Khasia Hills, one male.

A pretty little ♀ insect with blackish, iridescent wings, marked with some snow-white spots can hardly belong to this species.

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### 4. *Rhyacophila articulata*, n. sp.

Ninth segment in the ♂ continued broadly ventrally; no median process.

Wings with apex parabolic; radius not furcate; apical fork No. 2 much longer than No. 1; costal hairs simple; membrane smoky with yellowish irrorations.

Inferior appendages of the ♂ elongate seen from the side, upper and lower margins sub-parallel; second joint short, upper margin much shorter than lower; apical margin not excised, obliquely truncate and provided with numerous small spine-like teeth on the inner edge. The "lateral lobes" appear as if attached to a somewhat triangular prolongation of the last segment; the proximal end of the lobes is rounded and slightly upturned; the "lobes" themselves are long, somewhat concave and applied to each other vertically, the apices however rather difficult to define accurately through being concealed between the inferior appendages.

♀ unknown.

Expanse 25·5 to 29 mm.

Japan (Pryer), two males.

### 5. *Rhyacophila curvata*, n. sp.

Ninth segment in the ♂ continued ventrally rather broadly. No median process properly so-called, although the segment is triangularly produced between the long lateral lobes.

Wings with apex sub-angulate; radius not furcate; apical fork No. 2 usually longer than No. 1. Membrane rather dark, irrorated with pale golden yellow; fringes dark with broad pale interruptions; a faintly-marked pale broad ante-apical band. Costal hairs simple.

In the ♂ the inferior appendages have the basal joint rather long, broad at the base and narrowing gradually; second joint almost as long as the first, very short on its upper edge, the apical edge regularly excised to the obtusely pointed, sometimes much inturned, apex. The lateral lobes are long, concave, somewhat curved inwards, the apex excised.

The ♀ has a long telescopic ovipositor apparently without any important distinguishing characters.

Expanse 16 to 24 mm.

Khasia Hills, numerous examples. The species appears also to occur in Sikkim.

### 6. *Rhyacophila scissa*, n. sp.

Ninth segment in the ♂ continued ventrally very narrowly. Lateral lobes apparently conjoined, concave, their apices inturned.

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Apex of wings elliptical, radius not furcate at apex; apical fork No. 2 sub-equal to, or only slightly longer than No. 1; the large white spot at the thyridium very distinct. Costal hairs simple. Membrane smoky with rich dark golden irrorations; fringes golden interrupted with blackish.

In the ♂, the basal joint of the inferior appendages is short; second joint relatively long, widely cleft from apex to near the base; upper section slender and finger shaped; lower broad and concave. The peculiar formation will be understood best from the figures. The upper edge of the broad plate which forms the greater portion of the lower half of this second joint is free, and is probably liable to considerable variation in position from the effects of drying.

A ♀ which I refer to this species has a long telescopically exserted ovipositor.

Expanse ♂ 21 mm., ♀ 27·5 mm.

Khasia Hills, two males and one female.

### 7. *Rhyacophila anatina*, n. sp.

Ninth segment of ♂ not continued ventrally. Median process, with lateral lobes, present.

Apex of wing somewhat elliptical; apical fork No. 2 equal to or longer than No. 1. Costal hairs simple. Membrane fuscous, with golden irrorations; pterostigma dark.

Antennæ fuscous with pale annulations.

Head thorax and abdomen dark fuscous, paler beneath.

In the ♂ the median dorsal process is elongate, produced at either side into a slender finger-shaped process; lateral lobes slightly shorter, of elongate oval shape. Inferior appendages with the basal joint very long, narrowing slightly towards the apex; second joint small concave and rounded at the tip.

♀ with telescopic ovipositor.

Expanse 17 to 18 mm.

Khasia Hills.

### 8. *Rhyacophila naviculata*, n. sp.

Ninth segment in the ♂ apparently not continued ventrally. Median process long with parallel sides, constricted towards the apex which is divided into two divergent somewhat rounded lobes. No apparent ventral teeth.

Anterior wings rather broad, apex parabolic; apical fork Nos. 1 and 2 sub-equal in length; radius not distinctly furcate. Pale yellowish with greyish reticulations, but the wings are not in very good condition.

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In the ♂ the inferior appendages are long, narrow and nearly horizontal; second joint short and pointed. Inner genital parts complicated, but not to be defined accurately from the type.

Expanse 25 mm.

Trichinopoly (Castets), one male.

Not in good condition either with respect to wings or appendages, but the character of the latter is so peculiar, that I have had very little hesitation in describing the species.

### 9. *Rhyacophila inconspicua*, n. sp.

Ninth segment in the ♂ continuous ventrally. Dorsal process oval.

Wings elongate, apex elliptical, apical fork No. 2 extending further inwards than No. 1. Radius not distinctly furcate. Costal hairs simple.

Membrane of wings smoky, clothed with brownish pubescence, fringes dark grey; neuration fuscous.

Hairs of vertex black; legs fuscescent.

In the ♂ the oval dorsal process is divided by a median line; at its apex appear two approximated processes which gradually narrow to their acute points which are divergent; at either side of the dorsal process is a small somewhat oval piece, and beneath is apparently a pair of blades obliquely truncate on apical edge. The inferior appendages have the first joint moderately long, the upper and lower edges parallel; second joint short on the upper margin, the lower margin twice as long, apical edge oblique, very slightly concave in outline, the inner side of this joint being thickly set with very short setæ.

Expanse 12 mm.

Khasia Hills, one male.

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## Explanation of Plate I.

[*See explanation facing the* Plate.]

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## II. *Lepidoptera Heterocera from Northern China, Japan, and Corea.* By JOHN HENRY LEECH, B.A., F.L.S., F.Z.S., etc.

### PART III.

[Read November 15th, 1899.]

THE *Cymatophoridæ* and the subfamilies *Trifinæ* and *Acontiinæ* of the *Noctuidæ* are treated in the present instalment of my paper.

Altogether four hundred and fifty-one species are enumerated, and of these about eighty are, I believe, now described for the first time. Thirty-four of the species and four local forms, or aberrations, were previously described by me elsewhere.

### Family CYMATOPHORIDÆ.

#### Genus HABROSYNE.

Hübner, Verz. bek. Schmett., p. 236 (1816).

695. *Habrosyne derasa.*

*Noctua derasa*, Linn., Syst. Nat., i, p. 851.
*Gonophora derasa*, var. *intermedia*, Brem., Lep. Ost.-Sib., p. 46 (1864).
*Gonophora derasoides*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 77 (1878); Ill. Typ. Lep. Het., iii, p. 12, pl. xliv, fig. 1 (1879).
*Habrosyne derasa*, Hampson, Fauna Brit. Ind., Moths, i, p. 178 (1892).
*Gonophora pterographa*, Pouj., Ann. Soc. Ent. Fr., 1887, p. cxxxv.

There were specimens from Fujisan in Pryer's collection, and I have received examples from Ni-tou, Omei-shan, Wa-shan, Pu-tsu-fong, and Wa-ssu-kow. Occurs in July.

The Japanese specimens are referable to var. *intermedia*, Brem., from E. Siberia (=*derasoides*, Butl., from Hakodate). The Chinese examples are of the form *pterographa*, Pouj., which is rather larger than typical *derasa* and darker in colour, especially on the secondaries.



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*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; WESTERN CHINA; COREA; KASHMIR; and, according to *Hampson* (*l. c.*), DHARMSÁLA; SIKHIM; BURMA.

696. *Habrosyne dieckmanni.*

*Gonophora dieckmanni*, Graeser, Berl. Ent. Zeit., 1888, p. 148.

*Habrosyne dieckmanni*, Staud., Rom. sur. Lép., vi, p. 375 (1892).

There were two specimens in Pryer's collection; these agree with Graeser's description and also with two examples in my collection labelled "*derasoides*, Amur, 1887."

*Distribution.* AMURLAND; JAPAN.

Genus THYATIRA.

Hübner, Verz. bek. Schmett., p. 236 (1816).

697. *Thyatira batis.*

*Noctua batis*, Linn., Syst. Nat., i, p. 836 (1758).

*Thyatira batis*, Hübn., Verz. Schmett., p. 236 (1816); Hampson, Fauna Brit. Ind., Moths, i, p. 180 (1892).

The specimens in Pryer's collection were from Oiwake and Yesso; my collectors obtained examples at Ta-chien-lu, Wa-shan, Omei-shan, Chow-pin-sa, Ni-tou, and in the province of Kwei-chow. Occurs in June and July. All are typical, but some individuals are rather larger than the European examples in my collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; WESTERN CHINA; NORTH-WESTERN HIMALAYAS; SIKHIM; JAVA.

698. *Thyatira aurorina.*

*Gonophora aurorina*, Butl., Trans. Ent. Soc. Lond., 1881, p. 171.

*Thyatira möllendorfi*, Fixsen, Rom. sur. Lép., iii, p. 351, pl. xv, fig. 12 (1887).

Butler's type was from Yokohama; there were specimens from that locality, and also from Nikko and Fujisan, in Pryer's collection; I received one from Ni-tou, taken in July or August; in this example the basal patch is smaller, and the markings on the outer area are slightly different.

*Distribution.* JAPAN; COREA; WESTERN CHINA.

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### 699. *Thyatira apicalis*, sp. n.

Closely resembles *T. aurorina*, Butl., in coloration and marking, but it is a more slender insect, and agrees in this respect with *T. opalescens*, Alph. The apical area of primaries is pale, and the basal patch is much smaller than the same character in *T. aurorina*.

Expanse 34 millim.

One male specimen taken at Ni-tou in July or August.

*Habitat.* WESTERN CHINA.

### 700. *Thyatira flavida.*

*Thyatira flavida*, Butl., Cist. Ent., iii, p. 131 (1885).
*Thyatira oblonga*, Pouj., Ann. Soc. Ent. Fr., 1887, p. xlix.

I have one example of the type form from Ichang, taken in August. A specimen was also obtained at Omei-shan, and one at Wa-ssu-kow; both were taken in July and are referable to the form *oblonga*, Pouj., which differs from the type in having rather smaller spots on the primaries, and the secondaries are deeply suffused with dark grey instead of being yellowish straw-colour.

*T. flavida* was described from Hakodate.

*Distribution.* YESSO; CENTRAL and WESTERN CHINA.

### 701. *Thyatira flavimargo*, sp. n.

Primaries fuscous-brown traversed by several darker and paler wavy lines; the thorax is tinged with purplish-brown, and there is a spot of the same colour at the base of the wing; above the reniform stigma, which is outlined in blackish, there is a round pinkish spot, and a larger curved one towards apex; this latter is outwardly edged with black; on the middle of inner margin there is a narrow, upright, whitish spot and a round ochreous one edged inwardly with whitish towards angle; fringes brown, preceded by a sinuous black line. Secondaries fuliginous, broadly bordered with orange-yellow on outer margin; fringes also orange-yellow. Under surface fuliginous with yellowish central bands and marginal borders.

Expanse 46 millim.

One example of each sex from Pu-tsu-fong, one female specimen from Chia-kou-ho, and one male from Omei-shan. The above description has been drawn up from the Pu-tsu-fong female, as this specimen is in fine condition. The species occurs in June and July.

*Habitat.* WESTERN CHINA.

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### 702. *Thyatira conspicua*, sp. n.

Primaries pale fuscous-brown, traversed by faint wavy lines; basal patch white, of irregular shape, marked with black spots, and outlined in black; above the stigmata, which are white outlined in black, there is a large white patch traversed by short black lines; towards apex there is another white patch preceded and followed by black lines, and there are some smaller white marks outlined in black on the outer third of inner margin. Secondaries yellowish, with blackish, outwardly diffuse, submarginal band; fringes yellowish, with two black spots at outer angle. Under surface yellowish; the primaries are blackish on outer area, and have indications on the costal area of a double blackish central band; secondaries have a blackish spot on the middle of costa and a blackish band beyond the middle.

Expanse 50 millim.

One male specimen from Chia-kou-ho and one from Pu-tsu-fong, both taken in July.

*Habitat.* WESTERN CHINA.

### 703. *Thyatira violacea.*

*Thyatira violacea*, Fixsen, Rom. sur. Lép., iii, p. 343, pl. xv, fig. 11 (1887).

Described from Corea.

Specimens were obtained at Omei-shan, Wa-ssu-kow, Ni-tou, and Chang-yang in July and August.

*Distribution.* CENTRAL and WESTERN CHINA; COREA.

### 704. *Thyatira opalescens.*

*Thyatira opalescens*, Alph., Rom. sur. Lép., ix, p. 135, pl. ix, fig. 75 (1897).

Alphéraky describes this species from the Tchin-Kiaï valley to the north of Tâ-tsien-loû (Ta-chien-lu); my collectors met with it in most of the localities in Western China that they visited in June and July.

*T. undulans*, Hampson, from India, is a close ally.

*Habitat.* WESTERN CHINA.

### 705. *Thyatira ornata*, sp. n.

Primaries brownish with a slight olivaceous tint; stigmata outlined with blackish; there is a whitish dash from the base, extending almost to the curved blackish antemedial line; the basal area

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below the dash is paler brown; postmedial line blackish, elbowed below costa, thence almost straight to inner margin, and bordered externally with whitish; submarginal line whitish tinged with pink, waved, expanding into a blotch towards apex; costa above the reniform stigma marked with whitish tinged with pink; a marginal line black, interrupted by the nervules. Secondaries fuscous, with indications of a dusky central line. Fringes greyish-brown. Under surface of primaries fuscous-grey marked with whitish at apex and on outer third of costa; secondaries as on upper surface.

Expanse 36 millim.

Seven specimens from Ta-chien-lu, one from Wa-ssu-kow, and one from Chia-kou-ho. All were taken in July.

*Habitat.* WESTERN CHINA.

Allied to *T. opalescens*, Alph.

### 706. *Thyatira* (?) *pryeri.*

*Thyatira pryeri*, Butl., Trans. Ent. Soc. Lond., 1881, p. 172.

Two specimens from Yokohama in Pryer's collection.

*Habitat.* JAPAN.

## Genus GAURENA.

Walker, Cat. Lep. Het., xxxii, p. 619 (1865).

### 707. *Gaurena florescens.*

*Gaurena florescens*, Walk., Cat. Lep. Het., xxxii, p. 620 (1865); Hampson, Fauna Brit. Ind., Moths, i, p. 182 (1892).

*Thyatira florescens*, Butl., Ill. Typ. Lep. Het., vi, p. 32, pl. cix, fig. 5 (1886).

Six specimens from Pu-tsu-fong, taken in June and July.

*Distribution.* SIKHIM; KHÁSIS; NÁGAS (*Hampson*); WESTERN CHINA.

### 708. *Gaurena gemella*, sp. n.

Similar to *G. florescens*, Walk., but the colour of primaries is chocolate-brown and the markings are white; the spots in the cell are round and of nearly equal size. Secondaries fuscous-grey.

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Nine specimens, including examples of each sex, received from Ni-tou, Wa-ssu-kow, Pu-tsu-fong, and Ta-chien-lu. Occurs in July.

*Habitat.* WESTERN CHINA.

Except for the uniform character of the cell-spots of primaries I should be inclined to consider this as a colour aberration of *G. florescens.*

709. *Gaurena florens.*

*Gaurena florens*, Walk., Cat. Lep. Het., xxxii, p. 620 (1865).

*Thyatira florens*, Butl., Ill. Typ. Lep. Het., vi, p. 31, pl. cix, fig 4 (1886).

One example taken at Ta-chien-lu in July.

*Distribution.* SIKHIM; WESTERN CHINA.

710. *Gaurena aurofasciata.*

*Gaurena aurofasciata*, Hampson, Fauna Brit. Ind., Moths, i, p. 181 (1892).

I have ten specimens which appear to be referable to this species, but the postmedial band of primaries is not complete in all of them, and only one is without some trace of a white spot at the middle of the cell. These examples are from Ni-tou, Pu-tsu-fong, Wa-ssu-kow, Moupin, and Ta-chien-lu. Taken in June and July.

*Distribution.* SIKHIM; WESTERN CHINA.

711. *Gaurena grisescens.*

*Gaurena grisescens*, Oberth., Etud. d'Entom., xviii, p. 43, pl. v, fig. 65 (1893).

One specimen was received from Pu-tsu-fong, and one from Ni-tou; both are males and were taken in July. Oberthür's type was from Ta-chien-lu.

*Habitat.* WESTERN CHINA.

Genus POLYPLOCA.

Hübn.; Hampson, Fauna Brit. Ind., Moths, i, p. 182 (1892).

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712. *Polyploca ornata.*

*Polyploca ornata*, Leech, Proc. Zool. Soc. Lond., 1888, p. 653, pl. xxxii, fig. 10.
*Polyploca ornata*, var. *unicolor*, Leech, *l. c.*, p. 654, pl. xxxii, fig. 10a.

There was a long series in Pryer's collection, but the exact locality was not indicated.

*Habitat.* JAPAN.

Nearly allied to *P. albidisca*, Warr., and also to *P. renalis*, Moore.

713. *Polyploca arctipennis.*

*Xylina arctipennis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 198 (1878); Ill. Typ. Lep. Het., iii, pl. xlv, fig. 3 (1879).
*Cymatophora arctipennis*, Leech, Proc. Zool. Soc. Lond., 1888, p. 653.

The series in Pryer's collection was from Yokohama. I obtained specimens at Nagasaki in June.

*Habitat.* JAPAN; KIUSHIU.

714. *Polyploca punctigera.*

*Cymatophora punctigera*, Butl., Cist. Ent., iii, p. 131 (1885); Leech, Proc. Zool. Soc. Lond., 1888, p. 653.

There were five examples from Yokohama in Pryer's collection.

*Habitat.* JAPAN.

715. *Polyploca albicosta.*

*Thyatira albicosta*, Moore, Proc. Zool. Soc. Lond., 1867, p. 45.
*Saronaga albicosta*, Moore, Proc. Zool. Soc. Lond., 1881, p. 330.
*Polyploca albicosta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 184 (1894).

There was a specimen from Oiwake in Pryer's collection, and I have one from Mr. Manley of Yokohama. My collectors in Western China obtained one example at Wa-ssu-kow in July.

All these specimens have the costal area of the primaries much suffused with pink.

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In a former paper (Proc. Zool. Soc., 1888, p. 652) I referred the Oiwake insect to "*Cymatophora*" *albicostata*, Brem., to which it bears a very strong superficial resemblance. This was an error.

*Distribution.* SIMLA; SIKHIM (*Hampson*); WESTERN CHINA; JAPAN.

716. *Polyploca albicostata.*

*Cymatophora albicostata*, Brem., Lep. Ost.-Sib., p. 47, pl. v, fig. 6 (1864).

One male specimen from Pu-tsu-fong, and a female from the province of Kwei-chow, June and July. These agree with examples from Amurland in my collection. Fixsen records the species from Corea.

*Distribution.* AMURLAND; COREA; WESTERN CHINA.

717. *Polyploca* (?) *mirabilis.*

*Xylina mirabilis*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 365 (1879).
*Cymatophora mirabilis*, Leech, Proc. Zool. Soc. Lond., 1888, p. 651.
*Saronaga mirabilis*, Butl., Entom., xxiv, p. 237 (1891).

The nine specimens in Pryer's collection were from Yokohama and Gifu.

*Habitat.* JAPAN.

718. *Polyploca maxima.*

*Cymatophora* (?) *maxima*, Leech, Proc. Zool. Soc. Lond., 1888, p. 653, pl. xxxii, fig. 9.

Two specimens in Pryer's collection, one of which was from Oiwake and the other from Fujisan.

*Habitat.* JAPAN.

*Polyploca albibasis*, Hampson, from the Himalayas (Fauna Brit. Ind., Moths, i, p. 184), is very nearly allied to this species, but the primaries, which are silvery-grey or greenish in colour, have the costa bordered with whitish.

Genus PALIMPSESTES.

Hübner, Verz. bek. Schmett., p. 273 (1816).

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719. *Palimpsestes plumbea.*

*Cymatophora plumbea*, Butl., Ann. and Mag. Nat. Hist., 1879, p. 357.
*Cymatophora argenteopicta*, Oberth., Diagnoses, 1879, p. 13; Etud. d'Entom., v, p. 67, pl. iii, fig. 1 (1880).

There was a good series of specimens from Oiwake and Yokohama in Pryer's collection, and I have received examples from Hakodate, Chang-yang, and Ta-chien-lu. The species varies in size, colour, and markings; the Japanese specimens agree better with Oberthür's figure than do those in my collection from Amurland.

*Distribution.* AMURLAND; COREA; JAPAN; YESSO; CENTRAL and WESTERN CHINA.

720. *Palimpsestes ocularis.*

*Noctua ocularis*, Linn., Syst. Nat., i, 2, p. 837.
*Noctua octogesima*, Hübn., Eur. Schmett. Noct., pl. xliii, fig. 209.
*Cymatophora octogesima*, Treit., Schmett. Eur., x, 1, p. 95; Fixsen, Rom. sur. Lép., iii, p. 354 (1887).
*Cymatophora ocularis*, Guen., Noct., i, p. 19.
*Palimpsestes octogesima*, Hübn., Verz. Schmett., p. 273.

Fixsen records this species from Corea, and Staudinger from Amurland.

*Distribution.* EUROPE.—AMURLAND; COREA.

721. *Palimpsestes octogesima.*

*Cymatophora octogesima*, Butl. (*nec* Hübn.), Ann. and Mag. Nat. Hist., (5) i, p. 78 (1878); Ill. Typ. Lep. Het., ii, p. 21, pl. xxviii, fig. 2 (1879).
*Cymatophora angustata*, Staud., Rom. sur Lép., iii, p. 231, pl. xvii, fig. 6 (1887).

Butler's type was from Yokohama, Staudinger redescribed the species from Amurland.

*Distribution.* AMURLAND; JAPAN; ? COREA.

722. *Palimpsestes ampliata.*

*Cymatophora ampliata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 78 (1878); Ill. Typ. Lep. Het., ii, pl. xxviii, fig. 1 (1879); Oberth., Etud. d'Entom., v, p. 67, pl. iii, fig. 2 (1880); Leech, Proc. Zool. Soc. Lond., 1888, p. 652.



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There was a fine series of specimens from Yokohama and Oiwake in Pryer's collection. I have also received examples from Chang-yang and Chow-pin-sa.

*Distribution.* JAPAN; CENTRAL and WESTERN CHINA; COREA; AMURLAND.

### 723. *Palimpsestes duplaris.*

*Pyralis duplaris,* Linn., Faun. Suec., p. 352.
*Cymatophora duplaris,* Guen., Hist. Nat. Noct., i, p. 17.
*Tethea duplaris,* Hübn., Verz. Schmett., p. 273.

There was one rather dark-coloured specimen in Pryer's collection. So far as I am aware this is the only example recorded from Eastern Asia.

*Distribution.* EUROPE.—JAPAN.

### 724. *Palimpsestes brevis,* sp. n.

Primaries greyish-brown with a cupreous tinge; there are some silvery-white spots at the base and some whitish marks towards apex the latter with black dots on them; the stigmata are outlined in black and placed in an obscure, dusky band, which is contracted below the middle; there are indications of several black transverse lines, all most distinct towards costa, and the nervures are dotted with white. Secondaries fuscous-grey, darker on outer area. Under surface pale brown suffused with fuscous, especially on the outer margins.

Expanse 36 millim.

One male specimen taken in July at Ta-chien-lu.

*Habitat.* WESTERN CHINA.

### 725. *Palimpsestes brunnea,* sp. n.

Primaries pale fuscous-brown, the basal area greyish; sub-basal line rather broad, black, with an outward projection below the median nervure; four blackish, waved, transverse lines, the first curved, the second nearly straight, the third double, the fourth excurved about the middle; the space between the first and second, and between the third and fourth, brownish; submarginal line dusky, waved, followed on the costa by an apical, brownish-grey, triangular patch which is outwardly edged with black; stigmata indistinct, but the inner edge of the reniform is black. Secondaries and under surface of all the wings fuscous.

Expanse 50 millim.

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One female specimen taken in June or July at Pu-tsu-fong.

*Habitat.* WESTERN CHINA.

## Family NOCTUIDÆ.

### Subfamily *TRIFINÆ.*

### Genus XANTHIA.

Guenée, Noct., i, p. 389 (1852).

#### 726. *Xanthia flavago.*

*Noctua flavago,* Fabr., Mant. Ins., ii, p. 160.
*Noctua silago,* Hübn., Noct., fig. 191.
*Xanthia flavago,* Leech, Proc. Zool. Soc. Lond., 1889, p. 517.

One example from Yokohama in Pryer's collection, and I took one at Nikko in September; both these have the outer band broader and darker than is usual in European specimens. In this respect they agree with specimens from the Altai in my collection and also with examples from Amurland referred to by Staudinger (Rom. sur Lép., vi, p. 512).

*Distribution.* EUROPE.—ALTAI; AMURLAND; JAPAN.

#### 727. *Xanthia fulvago.*

*Noctua fulvago,* Linn., Faun. Suec., p. 312.
*Noctua cerago,* Hübn., Noct., figs. 190, 444.
*Xanthia fulvago,* Leech, Proc. Zool. Soc. Lond., 1889, p. 517.

There were two examples from Oiwake in Pryer's collection; one of these has a broad pinkish-brown band traversing the outer area of primaries, the other is very typical.

Staudinger records var. *flavescens,* Esp., as well as the type, from Amurland.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

### Genus BRACHYXANTHIA.

Butler, Ann. and Mag. Nat. Hist., (5) i, p. 169 (1878).

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### 728. *Brachyxanthia peculiaris.*

*Brachyxanthia peculiaris*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 169 (1878); Ill. Typ. Lep. Het., ii, p. 31, pl. xxx, fig. 11 (1878).
*Xanthia zelotypa*, Ld. (var. ?); Staud., Rom. sur Lép., vi, p. 511 (1892).

This species has been recorded from Hakodate, Yokohama, and Tokio, but I have not received any examples of it from Japan.

*Distribution.* ALTAI; AMURLAND; JAPAN; YESSO.

## Genus GORTYNA.

Ochsenheimer, Syst. Gloss. Schmett. Eur., iv

### 729. *Gortyna ochracea.*

*Noctua ochracea*, Hübn., Beitr., i, pl. 2, m (1786).
*Gortyna flavago*, Treit., Schmett., v, 2, p. 335.
*Ochria fortis*, Butl, Ann. and Mag. Nat. Hist., (5) i, p. 83 (1878); Ill. Typ. Lep. Het., ii, pl. xxviii, fig. 9 (1878).
*Ochria ochracea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 485.

The specimens in Pryer's collection were from Yokohama. I have also examples from Oiwake and Hakodate, taken in August and September.

The secondaries are darker, but otherwise var. *fortis* does not differ in any important character and hardly seems to be worthy of even a varietal name. Staudinger, chiefly on the strength of the white basal spot, considers *fortis* to be a distinct species. Examination of a good series, like my own, shows that this spot is sometimes almost invisible. He further adds that this particular character is never observed in *ochracea;* I shall be happy to show him specimens of *ochracea* in my own collection in which the spot is distinctly present although perhaps not so white in colour. I may remark that in *Hydrœcia leucographa*, Bork., placed immediately before *ochracea* in Staudinger's "Catalog," a similar basal spot may be present or absent.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO.

### 730. *Gortyna edentata.*

*Gortyna edentata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 485, pl. li, fig. 9.

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Described from a specimen, probably from Yokohama, in Pryer's collection; I took one example at Oiwake in October.

This species seems to be nearly allied to "*Cosmia*" *trapezoides*, Staud., from Central Asia, but among other differences is the shape of the reniform stigma. Staudinger (Rom. sur. Lép., vi, p. 509) states that he has an example of "*C.*" *trapezoides* from Amurland, and that it differs from the Central Asian type in being rather darker brown above and yellowish instead of white on the under surface. In these characters it agrees with my *edentata* and may possibly be an example of this species.

*Habitat.* JAPAN.

### 731. *Gortyna* (?) *acuminata.*

*Gortyna acuminata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 83 (1878); Ill. Typ. Lep. Het., ii, p. 24, pl. xxix, fig. 1 (1878).

Pryer's specimens were from Yokohama, and I took one at Nikko in September.

*Habitat.* JAPAN.

## Genus PYRRHIA.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 172 (1894).

### 732. *Pyrrhia umbra.*

*Noctua umbra*, Hufn., Berl. Mag., iii, p. 294 (1767).
*Heliothis marginata*, Guen., Noct., ii, p. 178 (1852).
*Chariclea umbra*, Leech, Proc. Zool. Soc. Lond., 1889, p. 520.
*Pyrrhia umbra*, Hampson, Fauna Brit. Ind., Moths, ii, p. 172 (1894).

Specimens in Pryer's collection from Oiwake and Fuji-san; my native collector took one example at Gensan in July, and I received one from Ichang that was captured in August.

*Distribution.* NORTH-WEST HIMALAYAS; NÁGAS (*Hampson*); AMURLAND; JAPAN; COREA; CENTRAL CHINA.—EUROPE.

## Genus HELIOTHIS.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 174 (1894).

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### 733. *Heliothis armigera.*

*Noctua armigera*, Hübn., Noct., fig. 370.
*Heliothis armigera*, Treit., Schmett., v, 3, p. 230; Hampson, Fauna Brit. Ind., Moths, ii, p. 174 (1894).

Specimens from Fujisan and Yokohama in Pryer's collection; I obtained examples at Fushiki, and have received others from Gensan and Wa-shan.

*Distribution.* UNIVERSAL.

### 734. *Heliothis succinea.*

*Heliothis succinea*, Moore, Proc. Zool. Soc. Lond., 1881, p. 362.
*Heliothis armigera*, Hampson, Fauna Brit. Ind., Moths, ii, p. 174 (1894).

I have examples from Yokohama, Gensan, Ichang, and Chang-yang, and also from Sultanpore in Kulu.

*Distribution.* KULU; MHOW; BOMBAY; CENTRAL CHINA; JAPAN; COREA.

### 735. *Heliothis déjeani.*

*Heliothis déjeani*, Oberth., Etud. d'Entom., xviii, p. 44, pl. iii, fig. 40 (1893).

Oberthür described this species from Ta-chien-lu; one example was received by me from Ni-tou, taken in July or August.

*Habitat.* WESTERN CHINA.

### 736. *Heliothis furvens.*

*Heliothis furvens*, Butl., Trans. Ent. Soc. Lond., 1881, p. 186.

Described from Tokio; there was one specimen, probably also from Tokio, in Pryer's collection, and I have received one from Chang-yang.

*Habitat.* JAPAN; CENTRAL CHINA.

### 737. *Heliothis scutosa.*

*Noctua scutosa*, Schiff., Wien. Verz., p. 89; Hübn., Noct., fig. 309.
*Heliothis scutosa*, Guen., Noct., ii, p. 182; Hampson, Fauna Brit. Ind., Moths, ii, p. 175 (1894).

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I have two specimens from Gensan, one captured in July and one in August.

*Distribution.* EUROPE.—AMURLAND; COREA; NORTH-WEST HIMALAYAS; NORTH CHINA.

### 738. *Heliothis dipsacea.*

*Noctua dipsacea*, Linn., Syst. Nat., xii, p. 856; Hübn., Noct., fig. 311.

*Heliothis adaucta*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 199 (1878); Ill. Typ. Lep. Het., iii, p. 19, pl. xlv, fig. 4 (1879).

There were specimens from Yokohama and Yesso in Pryer's collection. Mr. Whitely obtained the species at Hakodate, and I took it at Gensan. Examples have also been received from How-kow.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA; WESTERN CHINA.

### 739. *Heliothis ononis.*

*Heliothis ononis*, W. V.; Oberthür, Etud. d'Entom., xviii, p. 44, pl. iii, fig. 41 (1893).

Oberthür records this species from Ta-chien-lu, and Staudinger from Amurland. I have not seen any Asian specimens.

*Distribution.* EUROPE.—AMURLAND; WESTERN CHINA.

### 740. *Heliothis copiosa*, sp. n.

Primaries chocolate-brown on basal and outer marginal thirds, central third paler; antemedial line whitish, curved; postmedial line whitish, curved and recurved; submarginal line black, wavy and dentate, originating in a black linear spot on the costa; stigmata indistinct, the reniform followed by a diffuse pale spot; central shade blackish, expanding towards the costa; median nervure whitish between ante- and postmedial lines; the outer marginal area beyond the submarginal line is almost as pale as the central third; fringes preceded by a darker line. Secondaries orange-yellow black at the base and on the outer marginal area, discal mark black, conspicuous; fringes orange-yellow slightly tinged with fuscous. Under surface orange-yellow, primaries paler with large black discal spot, two smaller spots before it, and an irregular black band beyond it; secondaries tinged with rusty on costal and outer marginal areas;

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black discal spot and an interrupted black submarginal band, a small oval black spot obliquely placed near middle of the abdominal margin.

Expanse 30 millim.

One male specimen from How-kow, taken in July or August.

*Habitat.* WESTERN CHINA.

Allied to *H. cora*, Eversman.

741. *Heliothis* (?) *straminea*, sp. n.

Primaries straw-yellow, with a conspicuous dark-coloured reniform stigma; there are some dark brownish-grey marks on the inner margin, and indications of a submarginal line; fringes pinkish. Secondaries dark fuscous, fringes pinkish. Under surface pale buff, venation browner; primaries suffused with fuscous on the discal area; secondaries have two equidistant, wavy, pinkish, transverse lines.

Expanse 40 millim.

One male specimen from How-kow, taken in July.

*Habitat.* WESTERN CHINA.

## Genus AGROTIS.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 180 (1894).

742. *Agrotis segetum.*

*Noctua segetum*, Schiff., Wien. Verz., p. 252 (1776).
*Noctua segetis*, Linn., Syst. Nat., i, v, p. 2539 (1788–93).
*Agrotis segetis*, Hampson, Fauna Brit. Ind., Moths, ii, p. 181 (1894).
*Agrotis ingrata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 162 (1878); Ill. Typ. Lep. Het., ii, p. 27, pl. xxix, fig. 9 (1878).

Pryer's series comprised specimens from Yokohama and Gifu. I obtained the species at Nagasaki in May, at Sakata in August, at Nikko in September, and at Oiwake in October. Mr. Smith took some examples at Hakone in August, and a native collector secured a female example at Gensan in the same month. My collectors in China met with the species at Chang-yang, Ta-chien-lu, and Chia-kou-ho.

Japanese male specimens are very variable, some examples being fairly typical whilst in others the ground colour of primaries is suffused with ashy grey and the dark

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markings are very prominent. *Ingrata*, Butl., is a large dark form of the female, the secondaries being suffused with fuscous on the outer marginal area, and the venation is blackish.

Staudinger records from Amurland a form approaching var. *pallida*, Staud., from Central Asia. I have examples of this form from Amurland, and some of the specimens from the North-West Himalayas in my collection closely agree with them.

*Distribution.* EUROPE.—CENTRAL ASIA; AMURLAND; JAPAN; KIUSHIU; COREA; CENTRAL and WESTERN CHINA; INDIA; CEYLON.

### 743. *Agrotis informis.*

*Agrotis informis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 500, pl. l, fig. 1.
*Agrotis informis*, var. *confluens*, Leech, *l. c.*

Occurs at Hakodate in June and July. There were a few specimens without locality tickets in Pryer's collection, but others in the same collection were labelled "Yesso." This species may be separated from its near ally, *A. exclamationis*, by its larger size, darker colour, and stronger markings.

*Habitat.* YESSO; JAPAN.

### 744. *Agrotis tokionis.*

*Agrotis tokionis*, Butl., Trans. Ent. Soc. Lond., 1881, p. 178.
*Agrotis fucosa*, Butl., *l. c.*, p. 179.

The type of this species was from Tokio. Pryer's specimens were from Oiwake, Yokohama, and Yahyuskiro; my native collector obtained examples in Kiushiu.

*Agrotis nigrocostata*, Staud., from Amurland, is very closely allied to *A. tokionis*, Butl., and may be specifically identical with it, but it is not possible to be certain of this without comparing specimens of each, as the figure does not seem to be good enough to judge by.

*Distribution.* JAPAN; KIUSHIU; AMURLAND.

### 745. *Agrotis ypsilon.*

*Noctua suffusa*, Fabr., Mant. Ins., ii, p. 157.
*Agrotis suffusa*, Treit., Schmett., v, i, 152; Leech, Proc. Zool. Soc. Lond., 1889, p. 499.

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*Agrotis ypsilon*, Rott.; Hampson, Fauna Brit. Ind., Moths, ii, p. 182 (1894).

I have specimens from Yokohama, Tokio, Gensan, and most of the localities that my collectors visited in Central and Western China.

*Distribution.* EUROPE.—AMURLAND; JAPAN; COREA; CENTRAL and WESTERN CHINA; INDIA.—AMERICA.

### 746. *Agrotis plana*, sp. n.

Head brownish mixed with grey; thorax blackish, the collar edged with grey; abdomen fuscous-brown; antennæ pectinated. Primaries dark leaden-grey with a slight brownish suffusion; antemedial line black, rather oblique to the middle where it is angled, thence wavy to inner margin; postmedial line blackish, wavy, excurved beyond the cell and slightly angled above the inner margin; reniform and orbicular stigmata dark fuscous outlined in brown and black; marginal line black; apical third of costa dotted with whitish. Secondaries pale, suffused with fuscous. Under surface of primaries dark fuscous-grey with blackish discal dot and transverse line beyond, the latter not always distinct: secondaries pale fuscous becoming darker on costal area; discal dot and transverse line dusky.

Expanse 38 millim.

Seven male specimens from Pu-tsu-fong, three from Omei-shan, and two from Ni-tou. June and July.

*Habitat.* WESTERN CHINA.

### 747. *Agrotis squalida.*

*Spælotis squalida*, Boisd., Ind. Meth., 107, 800 (1829).
*Agrotis lycarum*, Herr.-Schäff., Schmett., ii, pl. xxii, figs. 122–124.
*Agrotis squalida*, Leech, Proc. Zool. Soc. Lond., 1889, p. 501.

I obtained a specimen at Hakodate in August, and there were three examples in Pryer's collection.

*Distribution.* URAL; AMURLAND; YESSO.

### 748. *Agrotis exoleta*, sp. n.

Head and thorax dark brown, patagia darker; abdomen cinnamon-brown; antennæ fasciculate. Primaries cinnamon-brown, darker on outer marginal area; there is a dark brown quadrate patch, enclosing and obscuring the stigmata, on the middle of the costal area, and a dot of the same colour below; submarginal line pale. Secondaries

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pale ochreous-brown, faintly tinged with fuscous except on outer margin. Fringes of all the wings darker than the ground colour and preceded by a brownish line. Under surface: primaries fuscous on basal two-thirds, outer third and costa pinkish-brown; secondaries pale ochreous-brown, costal area suffused with pinkish-brown.

Expanse 36 millim.

Four male specimens received from Omei-shan, where they were captured in June or July.

*Habitat.* WESTERN CHINA.

749. *Agrotis stictica.*

*Agrotis stictica*, Pouj., Ann. Soc. Ent. France, 1887, p. lxviii.

I have a figure of the type, which is a male specimen from Moupin. The species, which is not represented in my collection, seems to be closely allied to *A. ochracea*, Walk., from India.

*Habitat.* WESTERN CHINA.

750. *Agrotis saucia.*

*Noctua saucia*, Hübn., Noct., fig. 378.
*Agrotis saucia*, Treit., Schmett. Eur., v, i, p. 149 (1825).

I received one example from Chang-yang, one from Ta-chien-lu, and one from Chia-kou-ho, all taken in July.

*Distribution.* EUROPE.—CENTRAL and WESTERN CHINA.

751. *Agrotis obscura.*

*Noctua obscura*, Brahm., Insektenkal., i, p. 191 (1790).
*Noctua ravida*, Hübn., Noct., fig. 126.
*Graphiphora valida*, Walk., Cat. Lep. Het., Suppl., iii, p. 711 (1865).
*Graphiphora caliginea*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 165 (1878); Ill. Typ. Lep. Het., iii, p. 15, pl. xliv, fig. 10 (1879).
*Agrotis obscura*, Leech, Proc. Zool. Soc. Lond., 1889, p. 500.
*Spælotis ravida*, Butl., Trans. Ent. Soc. Lond., 1889, p. 381.
*Agrotis ravida*, Hampson, Fauna Brit. Ind., Moths, ii, p. 187 (1894).

This variable species occurs at Yokohama, Tokio, Chiuzenji, Oiwake, Hakodate, Gensan, and Shanghai. Some of my Japanese specimens are quite typical, others agree with *valida*, Walker, or *caliginea*, Butl., whilst others again

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connect these forms with each other, and both are linked up with typical *obscura* by intermediates.

*Distribution.* EUROPE.—KULDJA; AMURLAND; JAPAN; YESSO; COREA; EASTERN CHINA; INDIA.—NORTH AMERICA.

752. *Agrotis modesta.*

*Agrotis modesta*, Moore, Proc. Zool. Soc. Lond., 1881, p. 351; Hampson, Fauna Brit. Ind., Moths, ii, p. 188 (1894).

*Spælotis ambigua*, Butl., Ill. Typ. Lep. Het., vii, p. 54, pl. cxxviii, figs. 10, 11 (1889).

I have specimens from Ta-chien-lu, Moupin, Chow-pin-sa, and Chia-kou-ho, taken in July and August.

*Distribution.* DHARMSÁLA (*Hampson*); KULU; KASHMIR; WESTERN CHINA.

753. *Agrotis lucens.*

*Spælotis lucens*, Butl., Trans. Ent. Soc. Lond., 1881, p. 179.

*Agrotis lucens*, Leech, Proc. Zool. Soc. Lond., 1889, p. 501.

This species, which appears to be allied to *A. senna*, H.-G., was described from Tokio. It was not represented in Pryer's collection, and I did not meet with it in any part of Japan that I visited.

*Habitat.* JAPAN.

754. *Agrotis fennica.*

*Noctua fennica*, Tausch., Mém. Mosc., i, pl. xiii, fig. 4 (1806); Eversm., Bull. Mosc., 1837; Faun. Volg-Ural, p. 193.

*Opigena fennica*, Dup., Lép. Fr., Suppl., iv, p. 533, pl. xc, fig. 10.

*Agrotis fennica*, Staud., Rom. sur. Lép., vi, p. 417 (1892).

Recorded from Corea by Staudinger.

*Distribution.* NORTH RUSSIA; LAPLAND; SIBERIA; AMURLAND; COREA.

755. *Agrotis præcox.*

*Noctua præcox*, Linn., Syst. Nat., x, 517, xii, 854.

*Agrotis præcox*, Treit., Schmett., v, 2, p. 60.

*Hapalia præcox*, Leech, Proc. Zool. Soc. Lond., 1889, p. 498.

*Agrotis præcurrens*, Staud., Rom. sur Lép., vi, p. 422, pl. vi, fig. 7 (1892).

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There were eight specimens in Pryer's collection; these were from Yokohama, Oiwake, and Yesso; some of them are fairly typical, while others agree with Staudinger's figure of var. *præcurrens;* others again are intermediate between that form and typical *præcox,* and I find similar intermediate forms among my European examples.

Graeser (Berl. Ent. Zeit., 1888, p. 323) describes a form (*flavomaculata*) from Amurland, with which some Irish specimens in my collection seem to agree.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO.

756. *Agrotis albipennis.*

*Cosmia albipennis,* Butl., Ill. Typ. Lep. Het., vii, p. 58, pl. cxxvii, fig. 13 (1889).
*Agrotis albipennis,* Hampson, Fauna Brit. Ind., Moths, ii, p. 186 (1894).

I received one male specimen from Chang-yang, taken in July.

*Distribution.* NORTH-WEST HIMALAYAS; CENTRAL CHINA.

757. *Agrotis putris.*

*Noctua putris,* Linn., Faun. Suec., p. 315.
*Axylia putris,* Leech, Proc. Zool. Soc. Lond., 1889, p. 486.
*Agrotis putris,* Hampson, Fauna Brit. Ind., Moths, ii, p. 186 (1894).

Pryer's examples were from Tokio; I have specimens from Hakodate taken in June or July, and I took one example at Foochau in April.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; EASTERN CHINA.

758. *Agrotis tritici.*

*Noctua tritici,* Linn., Faun. Suec., p. 320.
*Agrotis tritici,* Treit., Schmett. Eur., v, i, 137; Auct.
*Agrotis tritici,* var. *obscurior,* Staud., Rom. sur Lép., vi, p. 420 (1892).

There was a male specimen in Pryer's collection which agrees well with a large dark strongly-marked example in my collection from Central France. This is probably referable to var. *obscurior* of Staudinger from Amurland.

Perhaps Dr. Staudinger may not be aware that nearly

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black forms of *A. tritici* occur both in Scotland and in Ireland.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

759. *Agrotis oberthuri*, sp. n.

♂ Primaries pale chocolate-brown with a whitish-brown streak along the costa and a black elongate patch at the base; postmedial line blackish, submarginal line pale, wavy, preceded by a series of black triangular markings and outwardly bordered with blackish-brown; stigmata outlined in black, orbicular whitish-brown with darker central dot, reniform whitish-brown traversed by a darker line; fringes brown, preceded by a black line. Secondaries pale fuscous, fringes whitish, preceded by a darker line. Under surface of primaries dark fuscous, with darker discal mark; secondaries paler, bordered with darker, fringes whitish.

♀ Larger. Primaries have a pale antemedial line, bordered with blackish and the claviform stigma is more conspicuous, forming a blackish triangular mark.

Expanse ♂ 40 millim., ♀ 42–46 millim.

One male specimen and three females from Ta-chien-lu, taken in July.

*Habitat.* WESTERN CHINA.

760. *Agrotis islandica.*

*Agrotis islandica*, Staud., Stett. Ent. Zeit., 1881, p. 419; Rom. sur Lép., vi, p. 419 (1892).

*Agrotis islandica*, var. *rossica*, Staud., *l. c.*; Alph., Rom. sur Lép., ix, p. 137 (1897).

Alphéraky records one female specimen from Kham. He says that the primaries are marked with white and that it was taken on May 28.

*Distribution.* ICELAND; LABRADOR.—CENTRAL ASIA; AMURLAND; WESTERN CHINA.

761. *Agrotis bremeri.*

*Agrotis bremeri*, Ersch., Horæ Soc. Ent. Ross. (Russ. Ed.), iv, p. 152 (1870).

*Agrotis speciosa*, Brem., Lep. Ost.-Sib., p. 50, pl. iv, fig. 10 (1864).

One female example from Yesso in Pryer's collection; this is much larger than a male specimen from Amurland in my collection.

*Distribution.* AMURLAND; YESSO.

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### 762. *Agrotis quadrisigna.*

*Agrotis quadrisigna*, Moore, Proc. Zool. Soc. Lond., 1881, p. 350.
*Chersotis quadrisigna*, Leech, Proc. Zool. Soc. Lond., 1889, p. 489.
*Euplexia niveiplaga*, Hampson, Fauna Brit. Ind., Moths, ii, p. 208 (1894).

One specimen received from Mr. Manley of Yokohama.
*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM; NILGIRIS (*Hampson*); KULU; JAPAN.

### 763. *Agrotis undosa.*

*Agrotis undosa*, Leech, Proc. Zool. Soc. Lond., 1889, p. 501, pl. l, fig. 3.

I obtained one specimen at Nikko in September, and one at Oiwake in the same month; there was an example, probably from Yokohama, in Pryer's collection.
*Habitat.* JAPAN.

### 764. *Agrotis costalis.*

*Penicillaria costalis*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 367 (1879); Leech, Proc. Zool. Soc. Lond., 1889, p. 536.

One specimen, without data, in Pryer's collection. The type was from Yokohama.
*Habitat.* JAPAN.

### 765. *Agrotis postflava*, sp. n.

Head and palpi whitish, the latter marked with black on the sides; thorax yellowish-white; abdomen whity-brown, tufts and terminal segments darker.

Primaries dark fuscous-brown, basal third conspicuously paler; a small tuft of black and white hairs at the base of the wing; antemedial line black, inwardly edged with whitish, dentate above inner margin; postmedial line whitish, edged inwardly with black, most distinctly towards the inner margin, curved beyond cell thence slightly oblique to inner margin; submarginal line whitish, wavy, with some black points and arrow-heads about the middle; reniform and orbicular stigmata outlined in white, the submedian nervure white below them; claviform outlined in black; the space between the stigmata and before the orbicular is blackish, the costa above the

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stigmata is whitish dotted with blackish. Secondaries pale yellowish, with blackish discal mark and broad blackish marginal borders; fringes pale yellowish. Under surface pale ochreous-brown; all the wings have a blackish discal spot and diffuse borders on the outer margin, extending on primaries along the inner margin.

Expanse 36 millim.

One male specimen received from Mr. Manley of Yokohama.

*Habitat.* JAPAN.

766. *Agrotis conjuncta*, sp. n.

*Male.* Head and thorax pale brown, abdomen paler, antennæ fasciculate. Primaries whity-brown; sub-basal line indistinct, a brownish oblique dash from about the middle of the base almost to the inner margin; antemedial line blackish, dentate towards the inner margin, oblique from costa; postmedial line blackish, wavy, curved beyond the cell, edged externally with whitish; the space enclosed by the ante- and postmedial lines, which are connected by a broad blackish bar, obscuring the claviform stigma, above the submedian nervure, is suffused with darker brown; submarginal line brownish, indistinct except towards the inner margin, the area beyond is darker brown; reniform and orbicular stigmata of the ground colour outlined in blackish and centred with dusky. Secondaries whity-brown with a dusky central transverse line and shade beyond. Under surface pale brownish on primaries and costal area of the secondaries, other portions of the latter whity-brown; all the wings have a dusky transverse shade and the primaries have a dusky discal spot.

In the female specimen the blackish connecting-bar of primaries is only indicated.

Expanse 32 millim.

One example of each sex from Omei-shan, taken in July or August.

*Habitat.* WESTERN CHINA.

767. *Agrotis* (?) *nitens.*

*Spælotis nitens*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 164 (1878); Ill. Typ. Lep. Het., ii, p. 27, pl. xxix, fig. 8 (1878).

*Nænia muscosa*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 290 (1878); Ill. Typ. Lep. Het., iii, p. 24, pl. xlvi, fig. 9 (1879).

*Hadena muscosa*, Alph., Rom. sur Lép., vi, p. 36 (1892).

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I have specimens from Yokohama, Nikko, Hakodate, and Gensan. Alphéraky records the *muscosa* form from the province of Sétchouén. Occurs in July and August.

*Distribution.* JAPAN; YESSO; COREA; WESTERN CHINA.

### 768. *Agrotis* (?) *cissigma.*

*Noctua cissigma,* Mén., Schr. Reis. Amur., ii, p. 58, pl. iv, fig. 9 (1859).

*Agrotis umbra,* Staud., Rom. sur Lép., vi, p. 411 (1892).

Staudinger records this species from Corea.

*Distribution.* AMURLAND; COREA.

### 769. *Agrotis* (?) *picturata,* sp. n.

Head and thorax whitish-ochreous, collar brown. Primaries ochreous-brown; sub-basal band ferruginous, shaded externally with whitish, commencing in a black spot on the costa; ante- and postmedial lines black, interrupted, indistinct; submarginal line ferruginous, interrupted about the middle, commencing in a darker triangle on the costa, shaded inwardly with whitish; there is a ferruginous patch at the outer angle and a smaller one about the middle of the outer margin; reniform stigma whitish, ill-defined; orbicular stigma of the ground colour centred with ferruginous, a conspicuous black spot between the stigmata extending to the costa; the apices of the wings are rather paler; fringes variegated with ferruginous and black, preceded by a series of black dots. Secondaries whity-brown suffused wiih fuscous on basal two-thirds; submarginal band and discal mark fuscous: primaries have the costal area and a portion of the central area suffused with dark brown; discal mark annulated, conspicuous; postmedial and antemarginal lines dark brown: secondaries have the costal area suffused with dark brown almost to the outer margin, interrupted by a transverse line.

Expanse 28–30 millim.

Two male specimens and one female from Chia-kou-ho, one male from Huang-mu-chang. July.

*Habitat.* WESTERN CHINA.

### 770. *Agrotis* (?) *panda,* sp. n.

Head and thorax brown; abdomen pale fuscous-brown; antennæ serrate-fasciculate. Primaries brownish, with a faint violet tinge; sub-basal line darker brown, its lower end uniting with a cuneiform, velvety, brown spot, which is edged above with whitish; antemedial line brown, oblique to below the middle thence forming a W to inner



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margin, the oblique portion of this line is outwardly diffuse; post-medial line blackish, denticulate, deeply indented above the inner margin, traversing an interrupted brown shade the outer edge of which is irregular but clearly defined; reniform stigma indistinct, orbicular triangular in shape, outlined in whitish and set in a large velvety-brown patch which is outwardly edged with whitish; a brown dot in cell between sub-basal and antemedial lines; fringes preceded by a series of brown lunules. Secondaries pale fuscous-brown. Under surface fuscous, the costa and outer margin of primaries and the costal area of secondaries tinged with pinkish.

Expanse 36 millim.

One male specimen from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

### 771. *Agrotis* (?) *depravata.*

*Agrotis depravata*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 360 (1879).

? *Luperina inutilis*, Alph., Rom. sur Lép., ix, p. 171, pl. xii, fig. 10 ♂ (1897).

Pryer's specimens were from Yokohama; the species has also been recorded from Tokio, and I obtained examples at Nagasaki in May and at Gensan in July. One specimen was received from Ichang, where it was captured in August.

Alphéraky re-describes this species from Corea, and as he does not refer to *A. depravata* he was probably unacquainted with Butler's description of it. A good deal of variation, both as regards size and intensity of markings, is exhibited.

*Distribution.* JAPAN; KIUSHIU; COREA; CENTRAL CHINA.

## Genus OCHROPLEURA.

Hübner, Verz. Schmett., p. 223.

### 772. *Ochropleura plecta.*

*Noctua plecta*, Linn., Syst. Nat., p. 851.

*Ochropleura plecta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 494.

*Agrotis plecta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 183 (1894).

I obtained two specimens at Gensan in July, and there was one example from Yokohama in Pryer's collection.

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Var. *glaucimacula*, Graeser, from Amurland, is described as somewhat darker chocolate-brown. I have ten examples from that country which appear to be referable to this form, and there are similar specimens in my European series of *plecta*. The form does not seem to be worthy of a varietal name (Berl. Ent. Zeit., 1888, p. 321).

I may observe that my Amurland specimens are in very fine condition, and may probably be some of those bred by Graeser from larvæ obtained at Nicolajewsk.

The Japanese and Corean specimens that I have are worn, but I think that when they were fresh they did not differ from typical European examples.

*Distribution.* EUROPE.—AMURLAND; JAPAN; COREA; SIKHIM; CEYLON.—NORTH AMERICA.

### 773. *Ochropleura triangularis.*

*Ochropleura triangularis*, Moore, Proc. Zool. Soc., 1867, p. 55.
*Agrotis triangularis*, Hampson, Fauna Brit. Ind., Moths, ii, p. 189 (1894).

Specimens in Pryer's collection from Yokohama; I have received others, taken in the same locality, from Mr. Manley. Occurs in July.

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM; SATÁRA; NILGIRIS (*Hampson*); KULU; KASHMIR; JAPAN.

### 774. *Ochropleura stupenda.*

*Ochropleura stupenda*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 166 (1878); Ill. Typ. Lep. Het., ii, p. 29, pl. xxx, fig. 3 (1878).
*Noctua stupens*, Oberth., Etud. d'Entom., v, p. 75, pl. vii, fig. 7 (1880).
*Agrotis stupenda*, Staud., Rom. sur Lép., vi, p. 416 (1892).

Pryer's specimens were from Yokohama, Yoshino, and Oiwake, and my native collector took examples at Gensan and in the island of Kiushiu. July.

*Distribution.* JAPAN; KIUSHIU; COREA; AMURLAND.

### 775. *Ochropleura subpurpurea*, sp. n.

Primaries dark purplish-brown with a rather brighter streak along the costal area; the reniform and orbicular stigmata are slightly paler, and the cell is filled in with velvety-black; the antemedial and submarginal lines only are distinct, these are black

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and waved, and there are some short black streaks on the costa towards the base. Secondaries fuliginous, with an indistinct blackish discal dot. Fringes of all the wings rather paler than the ground colour. Under surface dark fuscous.

Head and thorax colour of primaries, the metathorax with two small yellowish tufts; abdomen colour of secondaries.

Expanse 60 millim.

One male specimen from Omei-shan, and a female example from Wa-ssu-kow. July.

*Habitat.* WESTERN CHINA.

Allied to *O. consanguinea*, Moore, but much darker in colour and larger in size.

### 776. *Ochropleura mandarina*, sp. n.

Head blackish; thorax greyish-brown, patagia and collar darker, tegulæ paler brown. Primaries leaden-grey, costa broadly bordered with bright ochreous, terminating before the submarginal line; a blackish patch at the base intersected by an ochreous line; antemedial and postmedial lines pale brown edged with darker, the former is obliquely wavy and the latter is curved and recurved; submarginal line rufous-brown, edged outwardly with whitish, commencing in a broad patch on the costa; orbicular stigma ochreous-brown, the cell on each side filled in with velvety-black; reniform ill-defined, its inner edge ochreous-brown; fringes of the ground colour preceded by a blackish lunulated line. Secondaries fuscous; fringes rather paler, preceded by a dark line. Under surface of primaries fuscous-brownish on costa; secondaries paler fuscous, darker on costal area.

Expanse 46 millim.

One female specimen taken in July at Chia-kou-ho.

*Habitat.* WESTERN CHINA.

Also allied to *O. consanguinea*, Moore.

### 777. *Ochropleura vidua.*

*Agrotis vidua*, Staud., Rom. sur Lép., vi, p. 409, pl. vii, fig. 3 (1892).

Described from Amurland. Staudinger states that he has two female specimens from the Isle of Askold, and one from the Sutschan district. I have received one example of each sex from Wa-ssu-kow, two male from Chia-kou-ho, one female example from Ta-chien-lu, and one from Omei-shan. July and August.

*Distribution.* AMURLAND; WESTERN CHINA.

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## Genus GRAPHIPHORA.

Ochsenheimer, Eur. Schmett., iv, p. 68.

### 778. *Graphiphora c-nigrum.*

*Noctua c-nigrum*, Linn., Syst. Nat., x, p. 516.
*Graphiphora c-nigrum*, Leech, Proc. Zool. Soc. Lond., 1889, p. 496.
*Agrotis c-nigrum*, Hampson, Fauna Brit. Ind., Moths, ii, p. 188 (1894).

Pryer's specimens were from Oiwake and Yokohama. My native collector obtained the species at Gensan in August, and I have received examples from Chang-yang, taken in May, and from Ta-chien-lu, Ni-tou, and Chia-kou-ho, taken in July and August.

*Distribution.* EUROPE.—AMURLAND; JAPAN; COREA; CENTRAL and WESTERN CHINA; NORTH-WEST HIMALAYAS; KHÁSIS; BOMBAY; NILGIRIS; CEYLON; NORTH AMERICA.

### 779. *Graphiphora ditrapezium.*

*Noctua ditrapezium*, Bork., Schmett., iv, p. 515 (1792); Hübn., Noct., fig. 472.
*Graphiphora ditrapezium*, Leech, Proc. Zool. Soc. Lond., 1889, p. 496.
*Agrotis ditrapezium*, Hampson, Fauna Brit. Ind., Moths, ii, p. 188 (1894).

One example taken by a native collector at Hakodate in June or July. I received specimens from Ta-chien-lu, and Huang-mu-chang; these were taken in July.

Eastern Asian specimens in my collection are generally darker than European examples.

*Distribution.* EUROPE. — NORTH-WEST HIMALAYAS; WESTERN CHINA; AMURLAND; YESSO.

### 780. *Graphiphora lubentia.*

*Graphiphora lubentia*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 362 (1879).

The specimens in Pryer's collection were from Oiwake and Yokohama. I took one example at Hakodate in August, and the species has been recorded from Tokio.

*Habitat.* JAPAN and YESSO.

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781. *Graphiphora triangulum.*

*Noctua triangulum*, Hufn., Berl. Mag., ii, p. 306.
*Ochropleura plumbata*, Butl., Trans. Ent. Soc. Lond., 1881, p. 180.
*Graphiphora triangulum*, Leech, Proc. Zool. Soc. Lond., 1889, p. 496.

The *plumbata* form of this species occurs at Tokio and Yokohama; there was one female example of it in Pryer's collection from Yoshino. In my former paper I referred to Gensan specimens of *N. triangulum;* this seems to have been an error, at least I have no examples of the species from that locality at the present time.

*Distribution.* EUROPE.—JAPAN.

782. *Graphiphora lepida.*

*Graphiphora lepida*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 362 (1879).

Pryer's specimens were without locality tickets, but they were probably from the Yokohama district.

*Habitat.* JAPAN.

783. *Graphiphora brunnea.*

*Noctua brunnea*, Fabr., Mant., 168; Hübn., Noct., fig. 121.
*Graphiphora brunnea*, Steph., Ill. Brit. Ent., Haust., ii, p. 131 (1829).
*Agrotis brunnea*, Staud., Rom. sur Lép., vi, p. 414 (1892).

One example without locality ticket in Pryer's collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

784. *Graphiphora clava*, sp. n.

Primaries pale brown; basal and antemedial lines white both edged with black on costa, and the latter with brown towards inner margin; postmedial line white edged with brown, and projected outwardly along each nervule; submarginal line blackish, diffuse, wavy; marginal line represented by broad brownish lunules; there are three black stigmata each outlined in whitish and there is a blackish spot before the claviform stigma. Secondaries pale fuscous. Under surface of primaries fuscous, the costa and outer margin pale brown and the inner margin whitish; secondaries whitish with a blackish discal dot, the costal area is speckled with

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brownish, and there are vestiges of two brownish lines towards outer angle.

Expanse 38 millim.

One male specimen, taken at Pu-tsu-fong in June or July.

*Habitat.* WESTERN CHINA.

785. *Graphiphora pallidula*, sp. n.

Primaries brownish-white; basal, antemedial, and postmedial lines are dark brown, waved, and double; submarginal line and median shade brownish, the former waved and commencing in a conspicuous mark on the costa; reniform and orbicular stigmata black outlined in whitish; a marginal series of black points. Secondaries pale fuscous with darker discal lunule. Under surface of primaries fuscous, costa and outer margin brownish-white; secondaries whitish, speckled and marked with brownish on costal area, and with a brownish discal lunule.

Expanse 34 millim.

One male specimen and two females from Omei-shan. July.

*Habitat.* WESTERN CHINA.

786. *Graphiphora dahlii.*

*Noctua dahlii*, Hübn., Noct., figs. 465, 466.
*Agrotis dahlii*, Staud., Rom. sur Lép., vi, p. 414 (1892).
*Graphiphora canescens*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 165 (1878); Ill. Typ. Lep. Het., ii, p. 28, pl. xxx, fig. 1 (1878).
*Graphiphora dahlii*, Leech, Proc. Zool. Soc. Lond., 1889, p. 497.
*Cerastis subdolens*, Butl., Trans. Ent. Soc. Lond., 1881, p. 181.
*Agrotis descripta* (part), Hampson, Fauna Brit. Ind., Moths, ii, p. 184 (1894).

The form described by Butler as *subdolens* was met with commonly at Yokohama and Gifu (Pryer), and at Kiukiang, Ta-chien-lu, and Chia-kou-ho. These specimens are generally greyer-brown in coloration of primaries than European *dahlii*, but otherwise they do not exhibit any important variation from the type.

Of the *canescens* form there were specimens from Yokohama in Pryer's collection, and I have received others

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from Kiukiang. If Staudinger had referred to Butler's admirable description (*l. c.*) he would have seen that the colour is there given as "lilacine greyish" and not "bright red brown" as he states that it is; the figure of *canescens* also shows it to be lilacine greyish.

I have twelve specimens from Amurland, obtained at Nikolajewsk, Cabarowka, and Pokrofka, and half of these might be referred to Butler's *canescens*, with which they agree in size and coloration.

A large reddish-brown form occurs in Japan, but hitherto this has escaped being named as a form of this very variable species.

In a specimen from Kiushiu and another from Pu-tsu-fong, the claviform stigma is marked with black.

Staudinger remarks that the species is double brooded in Amurland, appearing in the perfect state in May and August, and this seems to be the case also in China.

*Distribution.* EUROPE.—AMURLAND; JAPAN; CENTRAL and WESTERN CHINA; NORTH-WEST HIMALAYAS.

### 787. *Graphiphora flavibrunnea*, sp. n.

Primaries ochreous-brown suffused with pinkish; there are indications of some dark transverse wavy lines, the postmedial being followed by a series of black dots on the nervules; the stigmata are not clearly defined, but the lower portion of the reniform is sometimes dark grey or brownish, and there is a blackish dot on the submedian nervure below the orbicular; submarginal line pale, outwardly edged with brownish; marginal line represented by a series of blackish lunules. Secondaries fuscous, with a dusky discal lunule, fringes pinkish. Under surface pale brownish suffused with pink on the costa and outer margin of each wing; the primaries have the discal area fuscous; all the wings have a narrow fuscous band, the secondaries have also a discal lunule.

Expanse 42–48 millim.

Two specimens of each sex from Moupin, one female from Ta-chien-lu, and one male from Chia-kou-ho. June and July.

*Habitat.* WESTERN CHINA.

Allied to *G. brunnea*, Fabr.

### 788. *Graphiphora descripta.*

*Noctua descripta*, Brem., Lep. Ost.-Sib., p. 51, pl. iv, fig. 11 (1864).

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*Graphiphora descripta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 497.
*Graphiphora rubicilia*, Moore, Proc. Zool. Soc. Lond., 1867, p. 55.
*Agrotis descripta* (part), Hampson, Fauna Brit. Ind., Moths, ii, p. 184 (1894).

Specimens in Pryer's collection from Yokohama; I obtained examples at Hakodate in August, at Nikko in September, and at Oiwake in October; I have also received the species from Kiushiu, Chow-pin-sa, and Chia-kou-ho. The Chinese specimens appear to have been taken in the summer months.

Staudinger, referring to *Agrotis dewitzi*, Graeser (Rom. sur Lép., vi, p. 406), which he suggests should be placed between *brunnea* and *festiva*, considers that it may be identical with *descripta*, Brem., a species, he states, that he is unacquainted with.

In my series of twenty-five specimens there is no variation of particular importance.

*Distribution.* AMURLAND; JAPAN; YESSO; KIUSHIU; WESTERN CHINA; SIKHIM.

### 789. *Graphiphora tincta*, sp. n.

Primaries purplish-brown powdered with whitish-grey scales on the basal area and along the costa to just above the reniform stigma, which is outlined in whitish-grey and filled in with the ground colour; the orbicular stigma is whitish-grey; antemedial and post-medial lines double, hardly darker than the ground colour, the former with whitish-grey between them and sharply angled inwards about the middle. Secondaries fuscous, basal area paler, fringes pinkish. Under surface of primaries shining fuscous, costal and outer margin pinkish; secondaries paler, tinged with pink on costal and outer marginal areas.

Expanse 40 millim.

One female specimen from Omei-shan, taken in June or July.

*Habitat.* WESTERN CHINA.

### 790. *Graphiphora destituta*, sp. n.

Pectus and legs rich chestnut-brown; antennæ fasciculate, with some whitish scales at the base.

Primaries golden-brown with purplish reflections; a darker brown blotch on the discal area enclosing the orbicular stigma which is

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obscure as also is the reniform stigma; transverse lines dark brown, the antemedial and postmedial being double and the latter slightly elbowed about the middle of its length. Secondaries pale fuscous-brown with dusky discal lunule and faint central and submarginal lines; fringes pinkish. Under surface shining fuscous suffused with brownish on the costal and outer areas of the primaries, and on costal area of the secondaries; all the wings have a dusky postmedial line, and the secondaries have a discal lunule.

Expanse 36 millim.

One male specimen from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

### 791. *Graphiphora tarda.*

*Noctua tarda*, Leech, Proc. Zool. Soc. Lond., 1889, p. 495, pl. l, fig. 4.

One female specimen, the type, taken by myself at Hakodate in August.

*Habitat.* YESSO.

### 792. *Graphiphora mandarina*, sp. n.

Primaries ochreous-brown, clouded and suffused with darker brown; all the transverse lines, excepting the submarginal, are black and double, each preceded and followed by a black dot on the costa; the antemedial line is wavy and followed by a black dot on the inner margin; the postmedial line is curved and recurved, formed of dots in the male, following this line there are some elongate black spots in the male, each with an ochreous dot upon it; submarginal line ochreous bordered outwardly with brown; the three stigmata ochreous outlined in brown, claviform suffused with brownish; central shade not always distinct but sometimes blackish. Secondaries pale fuscous with darker discal lunule and central band, fringes tinged with pinkish. Under surface of primaries shining fuscous, costa and outer marginal area pinkish; secondaries paler with the costal area pinkish; all the wings have a blackish discal spot and transverse band, usually most distinct on the secondaries.

Expanse 36 millim.

One male specimen from Pu-tsu-fong, two females from Ni-tou, and one female from Ta-chien-lu. July.

*Habitat.* WESTERN CHINA.

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### 793. *Graphiphora baia.*

*Noctua baja*, Fabr., Mant. Ins., ii, p. 175.
*Tæniocampa tabida*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 166 (1878); Ill. Typ. Lep. Het., ii, pl. xxx, fig. 5 (1878).

The type of *tabida*, Butl., which is a form of *N. baia*, was from Yokohama, and is in the National cellection at South Kensington. I have not seen any other example of this species from Japan.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

### 794. *Graphiphora nebula*, sp. n.

Primaries whitish-grey, sometimes with a faint brownish tinge; the most conspicuous marking is the central shade which is dark chocolate-brown, and originates in a diffuse cloud of the same colour on costal area; the usual transverse lines are present but not always well defined; the submarginal line is pale, interrupted, and preceded on the costa by a dark chocolate-brown patch, in some specimens there is a geminate spot of the same colour about the middle of this line, and a lunular one before its termination on the inner margin; fringes of the ground colour preceded by a series of black points. Secondaries fuscous, with a blackish discal lunule, fringes greyish. Under surface whitish suffused with fuscous on primaries and costal area of secondaries; all the wings have a blackish discal dot and transverse line.

Expanse 44–48 millim.

Five female specimens taken in July. Localities: Wassu-kow, Omei-shan, Ni-tou, Ta-chien-lu.

*Habitat.* WESTERN CHINA.

### 795. *Graphiphora deparca.*

*Mythimna deparca*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 358 (1879).
*Graphiphora deparca*, Leech, Proc. Zool. Soc. Lond., 1889, p. 498.

I obtained two male specimens at Oiwake in October, and there were other examples from Yokohama in Pryer's collection; my native collector took the species in Yesso.

*Habitat.* JAPAN and YESSO.

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796. *Graphiphora dilatata.*

*Mesogona dilatata*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 364 (1879).
*Noctua dilatata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 495.

Specimens in Pryer's collection from Yokohama; my native collector obtained examples in the island of Kiushiu.

*Habitat.* JAPAN and KIUSHIU.

797. *Graphiphora exusta.*

*Graphiphora exusta*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 164 (1878); Ill. Typ. Lep. Het., ii, p. 28, pl. xxix, fig. 11 (1878).
*Agrotis exusta*, var. *nigromaculata*, Graeser, Berl. Ent. Zeit., 1888, p. 320.
*Agrotis exusta*, Staud., Rom. sur Lép., vi, p. 413 (1892).

Pryer's specimens were from Yokohama. I have also received examples from Hakone and Hakodate, and from Chang-yang and the province of Kwei-chow. Occurs in July and August.

The examples of the typical form vary in colour of primaries from yellowish through reddish to purplish-brown. Specimens referable to var. *nigromaculata* were only received from Chang-yang and Yokohama, those from the last named locality are reddish in the coloration of primaries.

*Distribution.* AMURLAND; JAPAN; COREA; CENTRAL and WESTERN CHINA.

798. *Graphiphora augur.*

*Noctua augur*, Fabr., Sp. Ins., ii, p. 223; Hübn., Noct., 148.
*Graphiphora augur*, Steph., Ill. Brit. Ent. Haust., ii, p. 131.
*Agrotis augur*, Staud., Rom. sur Lép., vi, p. 407 (1892).

I obtained one example of each sex at Oiwake in October.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

Genus AMPHIPYRA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 190 (1894).

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799. *Amphipyra pyramidea.*

*Noctua pyramidea*, Linn., Syst. Nat., x, p. 518; Hübn., Noct., fig. 36.
*Amphipyra monolitha*, Guen., Noct., ii, p. 414 (1852); Hampson, Fauna Brit. Ind., Moths, ii, p. 191 (1894).
*Amphipyra surinia*, Feld., Reis. Nov., pl. cxii, fig. 17 (1864–1867).
*Amphipyra pyramidea*, var. *obscura*, Oberth., Etud. d'Entom., v, p. 85 (1880).
*Amphipyra pyramidea*, var. *obliquilimbata*, Graeser, Berl. Ent. Zeit., 1888, p. 352..

I have specimens of the *monolitha* = *surinia* form from Yokohama, Oiwake, Tsuruga, Fushiki, Nemoro, Hakone, Hakodate and Nagasaki; and also from Gensan, Kiukiang, Chang-yang, Omei-shan, Ta-chien-lu, Pu-tsu-fong, and the province of Kwei-chow. One example of the *obscura* form was received from Pu-tsu-fong, where it was taken in June or July.

The species occurs in July and August, but some examples were taken at Oiwake in October.

*Distribution.* DHARMSÁLA; SIKHIM (*Hampson*); JAPAN; YESSO; KIUSHIU; CENTRAL and WESTERN CHINA; COREA; AMURLAND.—EUROPE.

800. *Amphipyra erebina.*

*Amphipyra erebina*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 287 (1878); Ill. Typ. Lep. Het., iii, p. 23, pl. xlvi, fig. 12 (1879).
*Amphipyra perflua*, Leech, Proc. Zool. Soc. Lond., 1889, p. 540.

There were specimens from Yokohama in Pryer's collection, and I obtained others, in July, at Fushiki, Nagahama, and Gensan. Other Japanese localities are Tokio and Hakodate. The species does not appear to have been met with in China.

A considerable addition of material since my former paper was published, has led me to consider *erebina*, Butl., distinct from *perflua*, Fab.; at the same time I find that it agrees better with European examples of that species in the reddish-brown coloration of the primaries than it does with the blackish Eastern form *jankowskii*. It is distinguished by the pale basal position occupying quite

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half of the wing, and consequently greatly reducing the width of the blackish fascia.

*Distribution.* JAPAN; YESSO; COREA; AMURLAND.

801. *Amphipyra perflua.*

*Noctua perflua*, Fabr., Mant. Ins., ii, p. 179; Hübn., Noct., fig. 35.

*Amphipyra jankowskii*, Oberth., Etud. d'Entom., x, p. 27, pl. ii, p. 8 (1884).

*Amphipyra perflua*, Leech, Proc. Zool. Soc. Lond., 1889, p. 540.

A fine series from Chang-yang, also one example from Gensan. Occurs in July and August.

Staudinger (Rom. sur Lép., vi, p. 494) states that *perflua* and *jankowskii* have been found together in Amurland, and he remarks that his female example differs little from aberrant German specimens; the primaries are somewhat darker blackish-brown and the outer margin pale grey rather than pale brown. Referring to my series I find that the Asiatic specimens are nearly all darker in ground colour than European examples. There are some specimens agreeing with *jankowskii* and also intermediate forms.

In Japan this species seems to be represented by *A. erebina.*

*Distribution.* EUROPE.—AMURLAND; COREA; CENTRAL CHINA.

802. *Amphipyra livida.*

*Noctua livida*, Fabr., Mant. Ins., ii, p. 138; Hübn., Noct., fig. 38.

*Amphipyra livida*, Leech, Proc. Zool. Soc. Lond., 1889, p. 540; Hampson, Fauna Brit. Ind., Moths, ii, p. 191 (1894).

I took one example at Nemoro in April. Staudinger (Rom. sur Lép., vi, p. 493) states that this species is common in Amurland.

*Distribution.* EUROPE.—AMURLAND; YESSO.

803. *Amphipyra corvina.*

*Amphipyra corvina*, Motsch., Bull. Soc. Nat. Mosc., xxxix, p. 194 (1866); Leech, Proc. Zool. Soc. Lond., 1889, p. 540; Hampson, Fauna Brit. Ind., Moths, ii, p. 191 (1894).

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Common at Nagahama and Gensan in July, and at Hakodate in August. The specimens in Pryer's collection were from Yokohama and Oiwake, and I have received others from Chang-yang, Kiukiang, and the province of Kwei-chow.

Staudinger (Rom. sur. Lép., vi, p. 493) merges *corvina* in *livida*, but a good series such as that in my collection shows the former to be a generally larger species, the thorax and primaries are more intensely black with purplish reflections, and the secondaries are much more brightly tinted with reddish cupreous.

*Distribution.* AMURLAND; JAPAN; YESSO; COREA; CENTRAL and WESTERN CHINA; SIKHIM.

### 804. *Amphipyra schrenckii.*

*Amphipyra schrenckii*, Mén., Bull. de l'Acad., xvii, p. 249; Schr., Reise Amur., ii, Lep., p. 61, pl. v, fig. 4 (1859).

Occurs at Oiwake, Hakodate, and in the island of Kiushiu. The apical spot of primaries is much obscured in some specimens.

*Distribution.* AMURLAND; JAPAN; YESSO; KIUSHIU.

### 805. *Amphipyra tripartita.*

*Amphipyra tripartita*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 288 (1878); Ill. Typ. Lep. Het., ii, p. 36, pl. xxxii, fig. 4 (1878).

There was one specimen in Pryer's collection; I obtained two at Oiwake in the month of October, and have received a fine series from the island of Kiushiu and one example from Chang-yang; the latter was taken in July.

*Distribution.* JAPAN; KIUSHIU; CENTRAL CHINA.

### 806. *Amphipyra lignosa.*

*Perinænia lignosa*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 289 (1878); Ill. Typ. Lep. Het., ii, p. 37, pl. xxxii, fig. 7 (1878).

Specimens in Pryer's collection from Gifu and Yokohama, and I obtained one example in the latter locality in October.

*Habitat.* JAPAN.

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## Genus APOPESTES.

Hübner, Verz. Bek. Schmett., p. 275 (1818).

### 807. *Apopestes spectrum.*

*Noctua spectrum*, Esp., Schmett., iv, p. 131, pl. c, figs. 3, 4.
*Apopestes spectrum*, Hübn., Verz. Bek. Schmett., p. 275 (1816).
*Spintherops spectrum*, Boisd., Ind. Meth., p. 98 (1840).
*Amphipyra phantasma*, Eversm., Bull. Mosc., 1843, p. 546.
*Amphipyra spectrum*, Hampson, Fauna Brit. Ind., Moths, ii, p. 192 (1894).

Two examples of the *phantasma* form were received from Pu-tsu-fong, taken in June or July. Alphéraky (Rom. sur. Lép., v, p. 48) records the same form from the district of Kara-Souhaï, Central Mongolia, and Staudinger (*op. cit.*, p. 597) mentions it from Amurland.

*Distribution.* EUROPE.—PERSIA; QUETTA; AFGHANISTAN; HAZÁRA, NORTH-WEST PUNJAB; YARKAND; DHARMSÁLA (*Hampson*); AMURLAND; MONGOLIA; WESTERN CHINA.

### 808. *Apopestes inconspicua.*

*Apopestes inconspicua*, Butl., Trans. Ent. Soc. Lond., 1889, p. 191.
*Autophila dilucida*, Leech, Proc. Zool. Soc. Lond., 1889, p. 541.

Described from Tokio; there were two examples in Pryer's collection from Yokohama.

*Habitat.* JAPAN.

### 809. *Apopestes cataphanes.*

*Noctua cataphanes*, Hübn., Noct., fig. 559.
*Autophila cataphanes*, Hübn., Verz. Schmett., p. 274.
*Spintherops cataphanes*, Staud., Rom. sur Lép., vi, 597 (1892).

Staudinger states that he has received specimens, taken by Hertz to the north of Pekin, which agree almost entirely with pale South European examples. He describes var. *præligaminosa* from Amurland as much darker grey than the typical form; I have an example of this from the same country.

*Distribution.* EUROPE.—AMURLAND; NORTH CHINA.

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### Genus NÆNIA.

Stephens, Ill. Brit. Ent., Haust., ii, p. 166 (1829).

#### 810. *Nænia contaminata.*

*Graphiphora contaminata*, Walk., Cat. Lep. Het., Suppl., iii, p. 710 (1865).
*Nænia contaminata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 542.

There were specimens from Yokohama and Oiwake in Pryer's collection; I took an example at Gensan in June, and others, captured in July and August, were received from Kiukiang.

The type of this species was from Shanghai.

*Distribution.* AMURLAND; JAPAN; COREA; CENTRAL and EASTERN CHINA.

### Genus MORMO.

Ochsenheimer, Syst., iv, p. 70; Walk., Cat. Lep. Het., xiii, p. 1021 (1857).

#### 811. *Mormo muscivirens.*

*Mormo muscivirens*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 289 (1878); Ill. Typ. Lep. Het., ii. p. 37, pl. xxxii, fig. 5 (1878).

Specimens from Yokohama and Oiwake in Pryer's collection; I took examples at Gensan, and have received others from Kiukiang, Omei-shan, Wa-shan, and the province of Kwei-chow. The species has also been recorded from Nikko and Tsuruga. It occurs in June and July.

*Distribution.* JAPAN; COREA; CENTRAL and WESTERN CHINA.

### Genus ORTHOGONIA.

Felder, Wien. ent. Mon., vi, p. 38 (1862).

#### 812. *Orthogonia sera.*

*Orthogonia sera*, Feld., Wien. ent. Mon., vi, p. 38 (1862).
*Orthogonia crispina*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 288 (1878); Ill. Typ. Lep. Het., ii, p. 36, pl. xxxii, fig. 6 (1878).



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The specimens in Pryer's collection were from Yokohama and Yesso; I obtained the species at Oiwake, Shimoneseki, and Gensan, and I have received examples from Kiukiang, Chang-yang, and from most of the localities in Western China that were visited by my collectors.

*Crispina*, Butl., is a pale form of *O. sera*, Feld., which is an exceedingly variable species. In colour it ranges from olive-green through different shades of brown to almost black. The following two Chinese forms appear to be constant, and might almost be described as distinct species.

Var. *grisea*.—Primaries greyish with a faint purplish tinge, dusted with darker; a black oblique sub-basal band; central and sub-marginal lines indicated, the latter preceded by two black spots above the middle. Secondaries dark fuscous-brown with a darker central transverse line.

Seven examples, including both sexes from Omei-shan.

Var. *plana*.—Primaries purplish-brown, central area slightly darker, becoming blackish below the angle of antemedial line; other transverse lines indistinct; inner margin streaked with paler. Secondaries uniform dark fuscous-brown with pale brown fringes.

Three specimens from Ta-chien-lu and one example from each of the following localities—Chow-pin-sa, Wa-shan, Chia-kou-ho, and Chang-yang.

There are also two interesting aberrations, one from Omei-shan has the primaries pale purplish-brown with a black triangular mark at end of the cell; the other, from the province of Kwei-chow, has a conspicuous white blotch on outer lower edge of the postmedial line.

*Distribution*. JAPAN; YESSO; COREA; NORTHERN, EASTERN, CENTRAL, and WESTERN CHINA.

## Genus EPILECTA.

Hübner, Verz., p. 220 (1818).

### 813. *Epilecta semiherbida*.

*Triphæna semiherbida*, Walk., Cat. Lep. Het., xi, p. 743 (1857).

*Epilecta decorata*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 361 (1879).

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*Epilecta semiherbida*, Butl., Ill. Typ. Lep. Het., vi, p. 34, pl. cx, fig. 1 (1886); Leech, Proc. Zool. Soc. Lond., 1889, p. 502; Hampson, Fauna Brit. Ind., Moths, ii, p. 193 (1894).

A series in Pryer's collection, comprising specimens from Oiwake and Yokohama; I have also received examples from Chia-kou-ho and Omei-shan. Occurs in July.

*Distribution.* DHARMSÁLA; SIKHIM (*Hampson*); KULU; JAPAN; WESTERN CHINA.

## Genus HERMONASSA.

Walker, Cat. Lep. Het., xxxii, p. 631 (1865).

### 814. *Hermonassa cecilia.*

*Hermonassa cecilia*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 164 (1878); Ill. Typ. Lep. Het., iii, p. 14, pl. xliv, fig. 9 (1879).

*Opigena arenosa*, Butl., Trans. Ent. Soc. Lond., 1881, p. 179.

The specimens in Pryer's collection were from Yokohama; I obtained examples at Nikko in September, and I have received others from Hakodate and Kiukiang.

*Distribution.* JAPAN; YESSO; CENTRAL CHINA.

## Genus DIANTHŒCIA.

Boisd.; Walker, Cat. Lep. Het., iii, p. 496 (1857).

### 815. *Dianthœcia capsincola.*

*Noctua capsincola*, Esp., Schmett., iv, pl. clxxiii, fig. 5; Hübn., Noct., fig. 57.

*Dianthœcia capsincola*, Boisd., Ind. Méth., p. 125; Guen., Noct., ii, p. 21.

One male specimen from Pu-tsu-fong, and one example of the same sex from Chia-kou-ho, taken in June or July. These specimens are tinged with violet as in *Hadena cucubali*, and the markings are somewhat suffused; the secondaries are also darker than in European specimens. I propose the name *mandarina* for this form.

Alphéraky records a worn male example, taken in July, from Ou-pin in the province of Kan-sou.

*Distribution.* EUROPE,—WESTERN CHINA.

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816. *Dianthœcia compta.*

*Noctua compta*, Fabr., Mant. Ins., ii, p. 169; Hübn., Noct., fig. 53.
*Dianthœcia compta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 517.

There was a series in Pryer's collection from Oiwake; the species has also been taken at Tokio and Hakodate.

The Japanese specimens are browner in colour, and the white markings are not so clear as in European examples.

*Distribution.* EUROPE.—JAPAN; YESSO.

817. *Dianthœcia claripennis.*

*Epia claripennis*, Butl., Trans. Ent. Soc. Lond., 1886, p. 134.

There was one specimen from Nikko in Pryer's collection.

*Habitat.* JAPAN.

Genus HADENA.

Schrank, Fauna Boica, ii, 2, p. 158 (1802).

818. *Hadena cucubali.*

*Noctua cucubali*, Fuessl., Neues Mag., ii, 2, p. 218 (1784); Hübn., Noct., fig. 56.
*Dianthœcia cucubali*, Leech, Proc. Zool. Soc. Lond., 1889, p. 518.
*Hadena cucubali*, Hampson, Fauna Brit. Ind., Moths, ii, p. 198 (1894).

Pryer had specimens from Yokohama and Oiwake; I obtained examples from Tsuruga and Hakodate. Hertz captured the species to the north of Pekin.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; NORTHERN CHINA.

819. *Hadena trifolii.*

*Noctua trifolii*, Rott., Naturf., ix, p. 131 (1776).
*Noctua chenopodii*, Fabr., Mant. Ins., ii, p. 156 (1787); Dup., Lép. Fr., vii, 1, p. 31, pl. cii, fig. 3 (1827).
*Diataraxia chenopodii*, Hübn., Verz. Schmett., p. 219 (? 1818).
*Hadena farkasii*, Treit., Schmett., Suppl., p. 74 (1835).

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*Polia farkasii*, Herr.-Schæff., Schmett. Eur., ii, p. 254, pl. lxxvi, fig. 300.
*Mamestra trifolii*, Staud., Rom. sur Lép., vi, p. 429 (1892).
*Hadena trifolii*, Hampson, Fauna Brit. Ind., Moths, ii, p. 198 (1894).

Staudinger records var. *farkasii* from the north of Pekin.
*Distribution.* EUROPE.—CENTRAL ASIA; AMURLAND; NORTH CHINA.

820. *Hadena stolida.*

*Hadena stolida*, Leech, Proc. Zool. Soc. Lond., 1889, p. 509, pl. li, fig. 2.

One example in Pryer's collection.
*Habitat.* JAPAN.

821. *Hadena consanguis.*

*Hadena consanguis*, Guen., Noct., ii, p. 97 (1852); Hampson, Fauna Brit. Ind., Moths, ii, p. 199 (1894).
*Apamea undicilia*, Walk., Cat. Lep. Het., ix, p. 251 (1856).
*Apamea consanguis*, Moore, Lep. Ceyl., iii, p. 28 (1884).

A long and rather variable series from Yokohama in Pryer's collection. I have also received one example from Chang-yang.

The species appears to be common in Kulu, North-west Himalayas.

*Distribution.* Throughout PENINSULAR INDIA and CEYLON (*Hampson*); CENTRAL CHINA; JAPAN.

822. *Hadena unica.*

*Hadena unica*, Leech, Proc. Zool. Soc. Lond., 1889, p. 509, pl. li, fig. 12.

One specimen in Pryer's collection.
*Habitat.* JAPAN.

823. *Hadena contigua.*

*Noctua contigua*, Wien. Verz., p. 82; Hübn., figs. 85, 609.
*Hadena contigua*, Guen., Noct., ii, p. 103 (1852).

There was one example in Pryer's collection which agrees very well with some Scotch examples.

Staudinger records this species from Amurland, and

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states that the specimens do not differ from European examples.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

824. *Hadena dissecta.*

*Heliophobus dissectus*, Walker, Cat. Lep. Het., xxxii, p. 656 (1865).

*Neuria dissecta*, Moore, Lep. Ceyl., iii, p. 22, pl. cxlvi, fig. 7 (1884).

*Hadena dissecta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 200 (1894).

I obtained one specimen at Nikko in September, and I have received one from Chia-kou-ho, which was taken in July.

*Distribution.* SIKHIM; CEYLON (*Hampson*); JAPAN; WESTERN CHINA.

825. *Hadena aliena.*

*Noctua aliena*, Hübn., Noct., fig. 441.

*Mamestra aliena*, Leech, Proc. Zool. Soc. Lond., 1889, p. 487.

Pryer had one example from Oiwake in his collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

826. *Hadena brassicæ.*

*Noctua brassicæ*, Linn., Syst. Nat., x, p. 516; Hübn., Noct., fig. 88.

*Mamestra brassicæ*, Leech, Proc. Zool. Soc. Lond., 1889, p. 487.

*Hadena brassicæ*, Hampson, Fauna Brit. Ind., Moths, ii, p. 202 (1894).

Common throughout Japan, and I have specimens from Wa-ssu-kow, Pu-tsu-fong, and Chia-kou-ho. Staudinger records the species from North China.

*Distribution.* EUROPE.—AMURLAND; JAPAN; NORTH-WEST HIMALAYAS; PUNJAB; NORTHERN and WESTERN CHINA.

827. *Hadena nigerrima.*

*Mamestra nigerrima*, Warren, Proc. Zool. Soc., 1888, p. 302; Alph., Rom. sur Lép., ix, p. 138 (1897).

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*Hadena nigerrima*, Hampson, Fauna Brit. Ind., Moths, ii, p. 202 (1894).

I have one example from each of the following localities —Wa-shan, Chia-kou-ho, and the province of Kwei-chow, also two specimens from Ta-chien-lu. Occurs in June and July.

Alphéraky records a female example taken in June, somewhere between Ho-tchou-koï and Si-o-lo.

*Distribution.* THANDIÁNI, PUNJAB; SIKHIM (*Hampson*); WESTERN CHINA.

828. *Hadena persicariæ.*

*Noctua persicariæ*, Linn., Faun. Suec., p. 319; Hübn., Noct., fig. 64.
*Mamestra persicariæ*, Leech, Proc. Zool. Soc. Lond., 1889, p. 487.
*Mamestra persicariæ*, var. *unicolor*, Staud., Cat. Lep., p. 91.

Two examples from Oiwake in Pryer's collection, one of which is referable to var. *unicolor*. Both forms of the species were met with in most of the localities in Western China visited by my collectors.

The Chinese and Japanese specimens in my series are larger and blacker than European examples.

*Distribution.* EUROPE.—AMURLAND; JAPAN; WESTERN CHINA.

829. *Hadena culta.*

*Mamestra culta*, Moore, Proc. Zool. Soc. Lond., 1881, p. 347.
*Hadena culta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 204 (1894).

Two male specimens from Pu-tsu-fong taken in June or July.

I have also one male example from Omei-shan which differs somewhat from the typical form, I therefore describe it as—

var. *subviolacea*, nov.

Primaries darker brown, suffused in places with purplish-grey; markings as in the type except that all the greenish-white marks and lunules are absent. Secondaries are also darker.

*Distribution.* DALHOUSIE (*Hampson*); KASHMIR; WESTERN CHINA.

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830. *Hadena adjuncta.*

*Mamestra adjuncta*, Staud., Stett. Ent. Zeit., 1888, p. 249; Rom. sur Lép., vi, p. 423, pl. vi, fig. 8 (1892).
*Mamestra advena*, var. *adjuncta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 486.

On the plate Staudinger refers to this as a variety of *advena*, Fab., but in the text he describes it as a distinct species, which it certainly seems to be.

I have seven specimens from Oiwake and Yokohama, and one from Chang-yang.

*Distribution.* AMURLAND; CENTRAL and NORTH CHINA; JAPAN.

831. *Hadena grisea.*

*Alysia grisea*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 82 (1878); Ill. Typ. Lep. Het., iii, p. 13, pl. xliv, fig. 5 (1879).

Butler's type was from Yokohama.

*Habitat.* JAPAN.

832. *Hadena splendens.*

*Noctua splendens*, Hübn., Noct., fig. 400.
*Mamestra splendens*, Staud., Rom. sur Lép., vi, p. 427 (1892).

Staudinger records this species from Corea.

*Distribution.* EUROPE.—AMURLAND; COREA.

833. *Hadena illoba.*

*Agrotis illoba*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 162 (1878); Ill. Typ. Lep. Het., iii, p. 14, pl. xliv, fig. 7 (1879).
*Graphiphora pacifica*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 165 (1878); Ill. Typ. Lep. Het., ii, p. 28, pl. xxx, fig. 2 (1878).
*Mamestra declinans*, Staud., Stett. Ent. Zeit., 1888, p. 250; Rom. sur. Lép., vi, p. 427, pl. viii, fig. 2 (1892).

*Illoba* is greyish in colour of primaries, and the secondaries are less suffused with fuscous, but it does not differ in other respects from *pacifica*. Staudinger describes an extreme example of the *pacifica* form from Amurland as "*Mamestra*" *declinans*, and states that he has received nine specimens from Japan which agree with his Amurland

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type. These last were sent to him as *Mythimna deparca*, Butl., with the description of which he says he is unacquainted. If he had had access to a good library, he would have seen that his Japanese specimens were wrongly identified. Although Butler's figures of *illoba* and *pacifica* are not very good, yet they are fairly recognizable, and it is surprising that neither is referred to in the description of *declinans*.

There were specimens of all three forms from Yokohama and Oiwake in Pryer's collection. I have examples of the *pacifica* form from Gensan and Kiukiang, taken in July and August.

*Distribution.* JAPAN; COREA; CENTRAL CHINA; AMURLAND.

### 834. *Hadena limbata.*

*Apamea limbata*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 360 (1879).

Specimens from Yokohama in Pryer's collection; I received one example from the island of Kiushiu.

Butler suggests that this may be the "*Caradrina variolosa*" of Motschulsky, but adds, "the description is too imperfect for satisfactory identification."

*Habitat.* JAPAN and KIUSHIU.

### 835. *Hadena subpulchra.*

*Hadena subpulchra*, Alph., Rom. sur. Lép., ix, p. 173, pl. xii, fig. 119 (1897).

Alphéraky describes this species from Corea.

*Habitat.* COREA.

### 836. *Hadena lateritia.*

*Noctua lateritia*, Hufn., Berl. Mag., iii, p. 306 (1767); Esp., Schmett., pl. cxxxi, figs 3, 4 (1777).
*Septio lateritia*, Hübn., Verz. Schmett., p. 243 (? 1818).
*Noctua molochina*, Hübn., Noctua, fig. 741.
*Hadena lateritia*, Staud., Rom. sur. Lép., vi, p. 438 (1892).

Staudinger records a very large female specimen from Japan, which otherwise agrees with dark, well-marked European examples.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

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837. *Hadena triphænopsis.*

*Hadena triphænopsis*, Oberth., Etud. d'Entom., xviii, p. 43, pl. iii, fig. 39 (1893).

Described from Ta-Tsien-Loû.
*Habitat.* WESTERN CHINA.

838. *Hadena* (?) *porphyrea.*

*Noctua porphyrea*, Esp., Schmett., iv, pl. cxlv, fig. 5 (1789).
*Noctua satura*, Hübn., Noct., fig. 75 (1800).
*Hadena satura*, Treit., Schmett., v, i, p. 333; Leech, Proc. Zool. Soc. Lond., 1889, p. 509.

A very fine series from Yokohama in Pryer's collection; I took a specimen at Oiwake in October. The Japanese specimens are lighter in colour, and more variegated than European examples in my collection.
*Distribution.* EUROPE.—AMURLAND; JAPAN.

839. *Hadena spectabilis.*

*Hadena spectabilis*, Pouj., Ann. Soc. Ent. France, 1887, p. cx.

The type of this species (a female specimen) was from Moupin; I have an excellent figure of this. My collectors did not obtain the species.
*Habitat.* WESTERN CHINA.

840. *Hadena* (?) *christophi.*

*Hadena christophi*, Staud., Stett. Ent. Zeit., 1888, p. 252.
*Hadena* (*Miana*) *doerriesi*, Staud., Rom. sur. Lép., vi, p. 446, pl. viii, fig. 4 (1892).

Staudinger records this species from the north of Pekin, and states that he has a specimen from Japan which is very much lighter grey in colour, but probably referable to this species.

Staudinger's figure of *doerriesi* strongly resembles *Erastria* (*Miana*) *vulnerata*, Butl.
*Distribution.* AMURLAND; JAPAN; NORTH CHINA.

Genus CELÆNA.

Stephens, Ill. Brit. Ent., Haust., ii, p. 15 (1829).

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841. *Celæna nictitans.*

*Noctua nictitans*, Esp., Schmett., pl. cxxvi, fig. 5.
*Hydræcia nictitans*, Leech, Proc. Zool. Soc. Lond., 1889, p. 484.

There were specimens from Yokohama and Oiwake in Pryer's collection. I took the species at Hakodate and Gensan, and have received it from Chang-yang.

The variation of the species in Eastern Asia is identical with that occurring in Europe, but the specimens are rather larger in size.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA; CENTRAL CHINA.

Genus NEPHELODES.

Guenée, Noct., i, p. 129 (1852).

842. *Nephelodes datanidia.*

*Nephelodes datanidia*, Butl., Cist. Ent., iii, p. 132 (1885).

Two examples in Pryer's collection, probably from Yokohama.

*Habitat.* JAPAN.

Genus APAMEA.

Ochsenheimer, Syst. Gloss. Schmett., iv.

843. *Apamea gemina.*

*Noctua gemina*, Hübn., Noct., fig. 482.
*Noctua remissa*, Treit., Schmett., v, 1, p. 346.
*Apamea gemina*, Leech, Proc. Zool. Soc. Lond., 1889, p. 489.
*Hadena gemina*, Staud., Rom. sur. Lép., vi, p. 441 (1892).

The specimens in Pryer's collection were from Yokohama; they are somewhat paler than European examples.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

844. *Apamea didyma.*

*Noctua didyma*, Esp., Schmett. Eur., ii, pt. iv, p. 378, pl. cxxvi, fig. 7.
*Noctua nictitans*, Esp, pl. cxxvi, fig. 6 (*nec* Linn.).
*Noctua leucostigma*, Esp., pl. clix, fig. 7.

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*Apamea oculea*, Butl. (*nec* Linn.), Ill. Typ. Lep. Het., vii, p. 9 (1889).
*Euplexia didyma*, Hampson, Fauna Brit. Ind., Moths, ii, p. 210 (1894).

Two examples from Ta-chien-lu, and one from Omei-shan; these are modifications of the *nictitans* and *leucostigma* forms.

*Distribution.* EUROPE.—DHARMSÁLA; WESTERN CHINA.

845. *Apamea repetita.*

*Apamea repetita*, Butl., Cist. Ent., iii, p. 133 (1885).

Described from Yokohama; there were specimens from the same locality in Pryer's collection.

*Habitat.* JAPAN.

846. *Apamea intermedia*, sp. n.

Primaries pale brown, the median area between the transverse lines darker brown; antemedial line, outwardly oblique, wavy; postmedial line curved beyond the cell thence inwardly oblique; submedian line sinuous, brown edged with paler; reniform and orbicular stigmata of the ground colour but not well defined, the inner edge of each blackish; claviform outlined in black; fringes preceded by a series of black lunules. Secondaries pale fuscous. Under surface whity-brown suffused with fuscous especially on the primaries; the secondaries have a discal dot and a central line, both are dusky but indistinct.

Expanse 34 millim.

One female example in Pryer's collection, probably from the Yokohama district.

*Habitat.* JAPAN.

Allied to *A. didyma* and *A. repetita*, Butl.

847. *Apamea jankowskii.*

*Hadena jankowskii*, Oberth., Etud. d'Entom., v, p. 79, pl. iii, fig. 11 (1880).

I met with specimens at Gensan in July; these are larger than either of the eight examples from Amurland in my collection.

*Distribution.* AMURLAND; COREA.

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### 848. *Apamea conciliata.*

*Apamea conciliata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 84 (1878); Ill. Typ. Lep. Het., ii, p. 24, pl. xxix, fig. 3 (1878).

Pryer's specimens were from Yokohama.
*Habitat.* JAPAN.

### 849. *Apamea concinna*, sp. n.

Primaries pale olivaceous-brown dusted with blackish scales, the costa dotted with black ; a short, bifurcate, black streak from the base and three double, black, transverse lines, the third enclosing whitish and strongly curved below costa ; the area between ante- and post-medial lines, except on the costa, darker brown, intersected below the middle by a black longitudinal line ; reniform and oblique orbicular stigmata are paler, each outlined in blackish and enclosing a dark cloud ; outer marginal area suffused with brownish and with a diffused white patch above inner margin ; submarginal line pale, waved, and inwardly edged by a blackish shade which is slightly dentate about the middle ; fringes pale brown mottled with darker, preceded by a thin blackish line and a series of black triangular or lunulate marks, the apices of the middle ones projecting inwards. Secondaries greyish-brown suffused with fuscous and with indications of postmedial and submarginal lines ; fringes of the ground colour preceded by a lunulate blackish line. Under surface whitish suffused with fuscous, especially on the discal area of the primaries ; the secondaries have a blackish discal dot, postmedial line and submarginal band, and there are traces of a postmedial line on primaries.

Expanse 40 millim.

One female specimen from Wa-ssu-kow, taken in July.
*Habitat.* WESTERN CHINA.

### 850. *Apamea montana.*

Antennæ serrate and with paired bristles.

Primaries brownish-grey, with some blackish clouds at the base ; antemedial line whitish outwardly edged with black, slightly curved below costa and dentated before inner margin ; postmedial line black serrate and sinuous, double, filled in with whitish ; the space between these lines darker and clouded with blackish ; submarginal line whitish, wavy, and bidentate about the middle, marked with blackish from dentation to inner margin and followed by a blackish

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patch above dentation; reniform and orbicular whitish outlined in blackish and centred with brownish, there is a whitish spot on costal area above each stigma; fringes brownish marked with paler and preceded by a blackish lunulated line. Secondaries fuscous with a darker discal dot and wavy central line. Under surface of primaries fuscous; secondaries pale brownish with blackish discal dot and dusky central band.

Expanse 36 millim.

One male specimen from the high plateau to the north of Ta-Chien-lu.

*Habitat.* WESTERN CHINA.

851. *Apamea tripartita*, sp. n.

Antennæ with paired bristles.

Primaries fuscous-brown suffused with darker on central third, between the transverse lines; sub-basal line whitish edged internally with black and extending from costa to the short, black, longitudinal, basal streak; antemedial line whitish edged outwardly with black, oblique and angled above inner margin; postmedial line whitish edged on both sides with black, the upper portion curved with a whitish dot before it on the costa, the lower portion oblique; submarginal line whitish, wavy, commencing before a pale apical patch, edged internally with black and followed by black clouds on the outer margin; reniform of the ground colour its outer half whitish and its inner edge black, orbicular and claviform outlined in black; fringes of primaries of the ground colour chequered with blackish and preceded by an interrupted black line. Secondaries whitish suffused with fuscous-grey with darker discal mark and two transverse bands. Under surface of primaries fuscous, paler towards the base and on outer marginal area; secondaries whitish powdered with dark scales on costal area, discal mark and central band as above.

Expanse 34–38 millim.

Three female specimens from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

852. *Apamea cuneata.*

*Mamestra cuneata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 486, pl. l, fig. 12.

Described from a specimen from Yokohama in Pryer's collection.

*Habitat.* JAPAN.

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### 853. *Apamea intermixta*, sp. n.

Head and collar dark brown; thorax black, abdomen fuscous.

Primaries russet-brown clouded with blackish; the costa is dotted with black and there is a short, longitudinal, black bar from the middle of the base of the wing with an oblique one below it on the inner margin, the bar is surmounted by a patch of the clear ground colour; antemedial and postmedial lines blackish, wavy, but indistinct except below the middle where they approximate and are united by a black cloud; submarginal line of the ground colour with some black marks upon it about the middle; reniform and orbicular of the ground colour, outlined in darker and with a darker cloud in the lower portion of each, there is a clear space of the ground colour below the stigmata extending to the black connecting-cloud; fringes blackish dotted with the ground colour and preceded by a black lunulated line. Secondaries pale brown suffused with fuscous especially on outer marginal area; discal spot elongate, blackish; fringes pale brown intersected and preceded by darker lines. Under surface of primaries fuscous, pale drab at base and along basal two-thirds of the costa; postmedial line dusky with a pale dot upon it towards the costa: secondaries pale drab powdered and suffused with fuscous on costal half; discal mark annular, blackish; postmedial line blackish, serrated, costal half most distinct.

Expanse 34 millim.

One male specimen from Ta-chien-lu, taken in May or June.

*Habitat.* WESTERN CHINA.

### 854. *Apamea askoldis.*

*Hadena* (*Apamea*) *askoldis*, Oberth., Etud. d'Entom., v, p. 72, pl. iii, fig. 13 (1880).

*Apamea nivalis*, Butl., Trans. Ent. Soc., 1881, p. 177.

*Hadena* (*Miana*) *askoldis*, Staud., Rom. sur. Lep., vi, p. 445 (1892).

*Apamea askoldis*, Leech, Proc. Zool. Soc., Lond., 1889, p. 490.

*A. nivalis* was described from Tokio; there were two specimens in Pryer's collection, but the exact locality was not indicated. I have examples from Chang-yang, Chia-kou-ho, and Ta-chien-lu. Occurs in July and August.

*Distribution.* AMURLAND; JAPAN; CENTRAL and WESTERN CHINA.

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855. *Apamea butleri*, sp. n.

Primaries pale golden-brown, neuration minutely speckled with white; sub-basal line indistinct; antemedial and postmedial lines double, blackish, space between the lines darker than ground colour; submarginal line pale, wavy; stigmata outlined in blackish, the outer edge of reniform marked with white; fringes preceded by a pale line edged inwardly with black; costa marked with black dots, and some white specks towards the apex. Secondaries pale fuscous, darker towards outer margin, discal mark darker. Under surface whitish suffused with fuscous especially on the primaries; all the wings have a darker discal mark and postmedial line.

Expanse 35 millim.

One female example from Omei-shan, taken in July or August.

*Habitat.* WESTERN CHINA.

This species bears some resemblance to some brownish forms of *Apamea didyma*, Esp.

856. *Apamea basilinea.*

*Noctua basilinea*, Fabr., Mant. Ins., ii, p. 183; Hübn., Noct., fig. 427.

*Apamea basilinea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 489.

*Hadena basilinea*, var. *basistriga*, Staud., Rom. sur. Lép., vi, p. 439 (1892).

There were specimens from Yokohama in Pryer's collection, and I have received one example from Chia-kou-ho; the latter and one of the Japanese specimens agree with *basistriga*, Staud., which does not appear to be a variety of much importance. The same examples seem also to be identical with specimens of *finitima*, Clem., from North America in the National Collection at South Kensington.

*Distribution.* EUROPE.—AMURLAND; JAPAN; WESTERN CHINA.

857. *Apamea* (?) *arctides.*

*Miana arcta*, Oberth., Ent. d'Entom., v, p. 72, pl. iii, fig. 14 (1880), *nec* Led.

*Hadena arctides*, Staud., Stett. Ent. Zeit., 1888, p. 251; Rom. sur Lép., vi, p. 442 (1892).

Staudinger describes this species from the north of

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Pekin, and Oberthür records it as *Miana arcta*, Led., from the isle of Askold. I have not seen any example of it.

*Distribution.* AMURLAND; NORTHERN CHINA.

858. *Apamea* (?) *arcta.*

*Hadena arcta*, Led., Zool. bot. Vereins, 1853, p. 20, pl. ii, fig. 5.

*Raphia fasciata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 193 (1878); Ill. Typ. Lep. Het., ii, p. 33, pl. xxxi, fig. 5 (1878).

*Miana* (*Hadena*) *parietum*, Oberth., Etud. d'Entom., v, p. 73, pl. iii, fig. 15 (1880).

The specimens in Pryer's collection were from Yokohama and Oiwake; I obtained examples at Gensan in July, and my native collector took the species at the same place in August.

*Distribution.* ALTAI; AMURLAND; JAPAN; COREA.

859. *Apamea sordida.*

*Gerbatha sordida*, Butl., Trans. Ent. Soc. Lond., 1881, p. 174.

*Gerbatha pseudodyops*, Butl., Ann. and Mag. Nat. Hist., (5) xiii, p. 274 (1884).

There was an extensive and variable series in Pryer's collection, which includes both the forms named by Butler, and also other variations which so far have escaped being named.

The species occurs at Yokohama, Oiwake, Hakodate, and Gensan.

*Distribution.* JAPAN; YESSO; COREA.

860. *Apamea fasciculata*, sp. n.

Thorax and abdomen brown, head and collar paler brown; antennæ fasciculate in both sexes.

Primaries brown, basal area marked with paler below the median nervure, sub-basal line black, rather broad, extending from costa to median nervure; ante- and postmedial lines blackish edged with pale brown, the first is oblique, angled above inner margin, and the second is nearly straight but slightly curved below the cell, this is followed by a broad light brown band, the outer edge of which is traversed by the sinuous, brown, submarginal line; orbicular stigma light brown outlined in darker; reniform stigma whitish its inner



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edge suffused; claviform outlined in black. Secondaries fuscous with an obscure discal dot and central line. Under surface fuscous, the secondaries are rather paler than the primaries and have markings as on the upper surface.

Expanse 34 millim.

One male specimen and two females from Moupin, taken in June.

*Habitat.* WESTERN CHINA.

861. *Apamea* (?) *clava*, sp. n.

Primaries pale purplish-brown, with a short black streak from the base under median nervure; basal line represented by an elongate black dot on costa; antemedial line black, sinuous and curved, edged inwardly with pale brown; postmedial line black edged outwardly with pale brown, wavy, strongly curved, dentate above inner margin; submarginal line indistinct except on the costal area where it is white and dentated, it is preceded by some white dots on the costa; reniform and orbicular outlined in pale brown, a black longitudinal bar from the lower portion of the former and there are other black streaks between the nervules on the outer marginal area; fringes pale greyish-brown marked with darker at ends of the nervules and preceded by a black lunulated line. Secondaries fuscous-brown with pale grey-brown fringes. Under surface of primaries fuscous-brown on basal three-fourths, outer fourth greyish, there is a dusky spot on middle of the costa and two dusky wavy lines beyond, the outer one edged on costal area by a white dentate line and preceded by two white dots on costa: secondaries ashy-grey powdered with fuscous-brown, ante- and postmedial bands fuscous-brown, postmedial line dark brown, bluntly serrated, sinuous.

Expanse 36 millim.

One female example taken in June or July at Omei-shan.

*Habitat.* WESTERN CHINA.

862. *Apamea* (?) *variolosa.*

*Caradrina variolosa*, Motsch., Etudes Entom., vi, p. 33 (1857).

Butler suggests that his *Apamea limbata* may possibly be identical with this, but, as he says, the description of Motschulsky's insect is too vague "for satisfactory identification" (*ante*, p. 57).

*Habitat.* JAPAN.

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## Genus MIANA.

Stephens, Ill. Brit. Ent., Haust., iii, p. 11 (1829).

### 863. *Miana subfasciata.*

*Gerbatha subfasciata*, Butl., Trans. Ent. Soc. Lond., 1881, p. 193.
*Miana subfasciata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 491.

Pryer's specimens were from Yokohama and Oiwake; I have also examples from Hakodate, taken in July and August. The type was from Tokio.

*Miana fodinæ*, Oberth. (Etud. d'Entom., v, pl. iii, fig. 12), from the isle of Askold, appears to be closely allied to this species.

*Habitat.* JAPAN and YESSO.

### 864. *Miana* (?) *segregata.*

*Miana segregata*, Butl., Ann. and Mag. Nat Hist., (5) i, p. 85 (1878); Ill. Typ. Lep. Het., ii, p. 25, pl. xxix, fig. 5 (1878).
*Telesilla* (?) *placens*, Staud., Stett. Ent. Zeit., 1888, p. 259; Rom. sur Lép., vi, p. 444, pl. x, fig. 5 (1892).
*Hadena* (*Miana*) *segregata*, Staud., Rom. sur Lép., vi, p. 443 (1892).

Examples from Yokohama and Oiwake in Pryer's collection; and I have also specimens from Gensan, taken in July, and some examples from Ichang and Moupin.

*Distribution.* AMURLAND; JAPAN; COREA; NORTH, CENTRAL and WESTERN CHINA.

## Genus XYLOPHASIA.

Stephens, Ill. Brit. Ent. Haust., ii, p. 174 (1829).

### 865. *Xylophasia rurea.*

*Noctua rurea*, Fabr., Sp. Ins., ii, p. 240 (1781).
*Xylophasia rurea*, Steph., Ill. Brit. Ent., Haust., ii, p. 176; Dup., Hist. Nat. Lép. Fr., vii, p. 197, pl. cxiii, fig. 2; Guen., Noct., i, p. 137.
*Hadena rurea*, Staud., Rom. sur Lép., vi, p. 440 (1892).

One example of the light brown form from Ta-chien-lu,

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taken in July. Staudinger records the species from Amurland, where it does not seem to be common.

*Distribution.* EUROPE.—AMURLAND; WESTERN CHINA.

### 866. *Xylophasia funerea.*

*Hadena funerea*, Hein., Schmett. Deut., i, p. 828 (1859).
*Xylophasia sodalis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 83 (1878); Ill. Typ. Lep. Het., ii, p. 24, pl. xxix, fig. 2 (1878).
*Xylophasia funerea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 487.
*Euplexia sodalis*, Hampson, Fauna Brit. Ind., Moths, ii, p. 210 (1894).

The specimens in Pryer's collection were from Yokohama and Oiwake; the species is also recorded from Tokio, and I have received examples from Kiukiang, Chang-yang, Wa-shan, Chia-kou-ho, Ta-chien-lu, and Omei-shan. There are two extreme forms, one of these is very similar to *E. rurea* from Europe, whilst the other is *funerea*, Hein., which corresponds with *E. rurea* var. *alopecurus*, Esp. (= var. *combusta*, Dup.). Besides intermediate forms connecting the type and var. *sodalis* there are aberrations. In some of these latter the ground colour of the primaries is pale pinkish-brown, in others it is almost black. The markings may be conspicuous or almost entirely absent. The colour of the secondaries is also variable in tone.

To properly appreciate the variation of this species an extensive series of specimens, such as that before me, which consists of thirty-eight specimens, from different localities, is necessary.

*Distribution.* EUROPE.—AMURLAND; JAPAN; CENTRAL and WESTERN CHINA; HIMALAYAS.

### 867. *Xylophasia fasciata*, sp. n.

Head and thorax brownish; abdomen fuscous, terminal segment paler.

Primaries silvery-grey with a pale chocolate-brown patch at the base, a broad medial fascia, some clouds on outer margin, and a patch on costal area following the postmedial line; the outer edge of the central fascia is limited by the finely dentate blackish postmedial line; reniform stigma of the ground colour, its lower portion intersected by a streak of chocolate-brown; orbicular indistinct. Secondaries fuscous with blackish discal dot and traces of a postmedial line.

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Under surface pale brown suffused with fuscous; all the wings with blackish postmedial line and shade beyond, secondaries have a blackish discal dot.

Expanse 40 millim.

One male specimen from Chia-kou-ho, and one example of each sex from Pu-tsu-fong, taken in July.

*Habitat.* WESTERN CHINA.

868. *Xylophasia submarginata*, sp. n.

Primaries reddish-brown becoming darker on the outer marginal area; transverse lines whitish-brown shaded with black, but indistinct; costa marked with black, and with white towards the apex; reniform stigma marked with and partly outlined in white; orbicular and claviform stigmata outlined in black, the latter with a black bar from it to the postmedial line; some white dots on the venation beyond the postmedial line, a larger one on the median nervure and one on the submedian, the latter at the produced angle of the antemedial line. Secondaries fuscous-brown paler towards the base. Under surface of primaries fuscous, greyish along the costa, the outer margin is broadly greyish and sharply defined; fringes chequered greyish and fuscous: secondaries greyish-white, discal spot and transverse line fuscous, the latter followed by a broad fuscous band.

Expanse 48 millim.

One male specimen from Omei-shan, taken in June or July.

*Habitat.* WESTERN CHINA.

This species is allied to *X. funerea*, Hein., some specimens of which it closely resembles; apart, however, from different characters on the upper surface it may be distinguished by the conspicuous pattern of the under surface.

869. *Xylophasia incognita.*

*Xylophasia incognita*, Butl., Cist. Ent., iii, p. 132 (1885); Leech, Proc. Zool. Soc. Lond., 1889, p. 487.

This species, which appears to be closely allied to *X. lithoxylla*, Fabr., was described from Yesso.

*Habitat.* YESSO.

870. *Xylophasia scolopacina.*

*Noctua scolopacina*, Esp., Schmett., iv, pl. cxxx, fig. 1.
*Xylophasia scolopacina*, Leech, Proc. Zool. Soc. Lond., 1889, p. 487.

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Specimens from Oiwake in Pryer's collection, and others were taken by my native collector at Hakodate in June and July. These do not exhibit any important variation, but the markings are perhaps a trifle paler than in the European type.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO.

871. *Xylophasia commixta.*

*Xylophasia commixta*, Butl., Trans. Ent. Soc. Lond., 1886, p. 174.

Occurs at Yokohama and Tokio. There were three specimens in Pryer's collection.

*Habitat.* JAPAN.

872. *Xylophasia chinensis*, sp. n.

Primaries pale ochreous-brown, clouded and suffused with darker and with a short, longitudinal, black dash from the base; sub-basal line dusky; antemedial line blackish, waved, curved, and inwardly edged with paler; postmedial line black, curved from costa to middle thence slightly waved and oblique to inner margin; outer marginal area, except at apex, darker brown traversed by a pale waved line; reniform stigma not clearly defined, its inner edge bordered by a short, straight, black line; orbicular, oblique, edged with black; claviform blackish but indistinct; fringes dark brown preceded by a pale line and a series of triangular black marks. Secondaries pale whity-brown with a fuscous central line and submarginal band; marginal line sinuous, brownish; fringes of the ground colour traversed by a darker line. Under surface whitish suffused with fuscous especially on the primaries; all the wings have a black, or blackish, discal dot and two transverse lines beyond the middle.

Expanse 40 millim.

One male specimen from Chia-kou-ho, taken in July.

*Habitat.* WESTERN CHINA.

Allied to *X. hepatica* from Europe.

873. *Xylophasia tychoona.*

*Xylophasia tychoona*, Leech, Proc. Zool. Soc. Lond., 1889, p. 488, pl. li, fig. 3.

The type of this species was in Pryer's collection, and was probably from the Yokohama district.

*Habitat.* JAPAN.

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### Genus XYLOMYGES.

Guenée, Noct., i, p. 147 (1852).

#### 874. *Xylomyges bella.*

*Xylomyges bella*, Butl., Trans. Ent. Soc. Lond., 1881, p. 175.

A series from Yokohama in Pryer's collection.

*Habitat.* JAPAN.

### Genus PHLOGOPHORA.

Ochs.; Guenée, Noct., ii, p. 62 (1852).

#### 875. *Phlogophora beatrix.*

*Phlogophora beatrix*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 193 (1878); Ill. Typ. Lep. Het., iii, p. 16, pl. xliv, fig. 12 (1879).

*Phlogophora pallens*, Oberth., Diag. Lep. Ask., p. 14 (1879); Etud. d'Entom., v, pl. iii, fig. 3.

*Brotolomia beatrix*, Staud., Rom. sur Lép., vi, p. 463 (1892).

The specimens in Pryer's collection were from Oiwake and Yokohama; the species also occurs at Hakodate. These examples do not differ at all from some that I have from Amurland.

*Distribution.* AMURLAND; JAPAN; YESSO.

#### 876. *Phlogophora subpurpurea*, sp. n.

Closely allied to *P. beatrix*, Butl., but it is purplish-brown in colour; the ante- and postmedial lines are nearer together, the latter is more oblique and curves inwards and unites with the antemedial line above the inner margin; the submarginal line is nearer the margin; reniform stigma not marked with black on outer edge. Secondaries have two blackish transverse lines between the discal mark and the submarginal band. Under surface fuscous suffused with pinky-brown on the costal area of each wing; all the wings have a blackish discal mark and postmedial line, the latter curved and recurved on primaries, wavy on the secondaries; outer marginal area clouded with blackish; body bright ferruginous.

Expanse 48 millim.

One male specimen from Ta-chien-lu taken in July. There is a female example from Simla in the National Collection at South Kensington.

*Distribution.* WESTERN CHINA; NORTHERN INDIA.

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### 877. *Phlogophora fuscomarginata*, sp. n.

Head, thorax and abdomen pale brownish, tufts on metathorax dark velvety-brown; lateral tufts of abdomen pinkish; pectus, tibiæ, and under side of abdomen rusty-red.

Primaries pale brownish tinged with fuscous; basal line short, blackish, indistinct; antemedial line blackish, curved and recurved, preceded by a blackish triangular patch on the inner margin; postmedial line blackish, curved to vein 5 where it is angled, thence slightly curved to inner margin and shaded internally with deep fuscous; submarginal line paler than ground colour edged, and obscured below vein 6, by a dark brown band; the area beyond is deep fuscous from vein 6 almost to the inner margin; there are indications of other finer transverse lines; reniform and orbicular both large, of the ground colour edged and centred with paler and outlined in blackish; fringes dark fuscous, except towards apex, preceded by a black line which is lunulated below apex. Secondaries pale brown suffused with fuscous on basal area, the discal mark is linear but indistinct; central line blackish, wavy; submarginal and marginal lines dark fuscous, interrupted; fringes brown preceded by a blackish line. Under surface of primaries pale brown, suffused with fuscous on median area, merging into ochreous on the outer half of the wing and powdered with red scales towards the apex; there is a dusky bar-like cloud at the end of the cell with an ochreous spot on each side of it; postmedial line dark brown, curved; submarginal band fuscous parallel with the outer margin but indented below the costa; outer margin clouded with fuscous below vein 6: secondaries pale brown, the costal area powdered with rusty-red, postmedial line dark brown, wavy.

Expanse 56 millim.

One male example from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

## Genus HELOTROPHA.

Lederer, Noct. Eur. (1857).

### 878. *Helotropha leucostigma.*

*Noctua leucostigma*, Hübn., Noct., fig. 375.
*Noctua fibrosa*, Hübn., Noct., fig. 385.
*Apamea leucostigma*, Treit., Schmett., v, 2, p. 331.
*Cerastis lævis*, Butl., Trans. Ent. Soc. Lond., 1881, p. 181.

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*Helotropha leucostigma*, Leech, Proc. Zool. Soc. Lond., 1889, p. 485.

I have specimens from Yokohama, Hakodate, and Gensan; all these were taken in June.

Japanese and Corean specimens (var. *lævis*) are rather larger than European examples, but exhibit similar variation.

Oberthür (Etud. d'Entom., v, p. 72) records three specimens of *Apamea leucostigma*, Treitschke, from the isle of Askold.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA.

## Genus SEMIOPHORA.

Steph.; Hampson, Fauna Brit. Ind, Moths, ii, p. 205 (1894).

### 879. *Semiophora carnipennis.*

*Tæniocampa carnipennis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 167 (1878); Ill. Typ. Lep. Het., ii, p. 30. pl. xxx, fig. 6 (1878).

Pryer's specimens were from Yokohama, the only locality from which I have seen examples of this species.

*Habitat.* JAPAN.

### 880. *Semiophora pallescens.*

*Semiophora pallescens*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 166 (1878); Ill. Typ. Lep. Het., ii, p. 29, pl. xxx, fig. 4 (1878).

*Tæniocampa lata*, Staud., Rom. sur Lép., vi, p. 496, pl. vi, fig. 6 (1892).

Specimens from Yokohama in Pryer's collection.

Staudinger's description and figure of *lata* agree very well with *pallescens*, Butl., to which species he does not even refer.

*Distribution.* JAPAN; AMURLAND.

### 881. *Semiophora gothica.*

*Noctua gothica*, Linn., Syst. Nat., x, p. 515; Clerck., Icon., pl. i, fig. 1.

*Tæniocampa gothica*, Guen., Noct., i, p. 347.

*Semiophora gothica*, Leech, Proc. Zool. Soc. Lond., 1889, p. 511.

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Two examples in Pryer's collection, one from Gifu and the other without locality ticket; this last approaches the form known as *gothicina* H.-S.

Staudinger describes a form of this species from Amurland as var. *askoldensis* (Rom. sur Lép., vi, p. 496).

*Distribution.* EUROPE.—AMURLAND; JAPAN.

882. *Semiophora munda.*

*Noctua munda*, Esp., Schmett., iii, pl. lii, figs. 5, 6.
*Tæniocampa munda*, Guen., Noct., i, p. 356; Leech, Proc. Zool. Soc. Lond., 1889, p. 512.
*Tæniocampa munda*, var. *immaculata*, Staud., Cat., p. 114 (1871).

Specimens from Yokohama and Yesso in Pryer's collection; my native collector obtained two examples in the island of Kiushiu.

One of the Yokohama specimens is referable to var. *immaculata.*

*Distribution.* EUROPE.—JAPAN; YESSO; KIUSHIU.

883. *Semiophora gracilis.*

*Noctua gracilis*, Fabr., Mant. Ins., p. 148; Hübn., Noct., fig. 168.
*Tæniocampa gracilis*, Guen., Noct., i, p. 355; Leech, Proc. Zool. Soc. Lond., 1889, p. 512.
*Tæniocampa ella*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 167 (1878); Ill. Typ. Lep. Het., ii, p. 30, pl. xxx, fig. 7 (1878).

A series of pale and dark coloured forms, from Yokohama, in Pryer's collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

884. *Semiophora instabilis.*

*Noctua instabilis*, Esp., Schmett., iv, pl. cli, fig. 3.
*Tæniocampa evanida*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 362 (1879).
*Tæniocampa instabilis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 512.

There were five specimens from Yokohama in Pryer's collection, and my native collector obtained two examples in the island of Kiushiu, all these are pale in colour, and generally larger than European specimens; they are

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referable to var. *evanida*, Butl., which appears to be a good local form.

*Distribution.* EUROPE.—JAPAN; KIUSHIU.

885. *Semiophora stabilis.*

*Noctua stabilis*, View., Tab. Verz., ii, p. 14 (1789); Hübn., Noct., fig. 171.

*Tæniocampa stabilis*, Guen., Noct., i, p. 354; Leech, Proc. Zool. Soc. Lond., 1889, p. 513.

A series, comprising specimens from Yokohama and Yesso, in Pryer's collection; these vary in the same way as European examples.

*Distribution.* EUROPE.—JAPAN; YESSO.

886. *Semiophora odiosa.*

*Agrotis odiosa*, Butl., Ann. and Mag. Nat. Hist., (4) i, p. 162 (1878); Ill. Typ. Lep. Het., iii, p. 14, pl. xliv, fig. 8 (1879).

*Tæniocampa odiosa*, Leech, Proc. Zool. Soc. Lond., 1889, p. 513.

A series from Yokohama, and including one example from Kiushiu.

*Habitat.* JAPAN and KIUSHIU.

Genus CLAVIPALPULA.

Staudinger, Rom. sur Lép., vi, p. 499 (1892).

887. *Clavipalpula aurariæ.*

*Tæniocampa aurariæ*, Oberth., Etud. d'Entom., v, p. 76, pl. iii, fig. 6 (1880).

*Clavipalpula aurariæ*, Staud., Rom. sur Lép., vi, p. 499 (1892).

My native collector obtained a specimen at Hakodate in June or July, and there was one example in Pryer's collection, also from Yesso.

*Distribution.* AMURLAND; YESSO.

Genus PANOLIS.

Hübner, Verz. bek. Schmett., p. 214 (1816).

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888. *Panolis piniperda.*

*Phalæna piniperda*, Panz. et Kob., Baumtr. Nadelw., p. 51, pl. i, figs. 1–12 (1786).
*Panolis piniperda*, Leech, Proc. Zool. Soc. Lond., 1889, p. 510.

There were specimens from Yokohama and Gifu in Pryer's collection.

*Distribution.* EUROPE.—JAPAN.

Genus EUPSILIA.

Hübner, Verz. bek. Schmett., p. 231.

889. *Eupsilia tripunctata.*

*Eupsilia tripunctata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 168 (1878); Ill. Typ. Lep. Het., ii, p. 30, pl. xxx, fig. 9 (1878); Leech, Proc. Zool. Soc. Lond., 1889, p. 311.
*Scopelosoma satellitia*, Staud., Rom. sur Lép., vi, p. 518 (1892).

I have ten specimens, all from Yokohama.

Staudinger records this species from Amurland as *S. satellitia.* On comparing my series of *S. tripunctata* with the thirty examples of European *S. satellitia* in my collection I find that the former can be at once distinguished by the colour of the primaries, and the larger size of the reniform stigma and spots adjacent thereto (these white spots are placed farther from the reniform); the contour of the two dark, transverse outer lines is also different. These characters are constant, and it is difficult to understand how Staudinger could have overlooked them.

*Distribution.* JAPAN; AMURLAND.

890. *Eupsilia strigifera.*

*Eupsilia strigifera*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 363 (1879).

One specimen from Yokohama in Pryer's collection; the type was from the same locality.

*Habitat.* JAPAN.

Genus DASYCAMPA.

Guenée, Noct., i, p. 387 (1852).

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### 891. *Dasycampa rubiginea.*

*Noctua rubiginea*, Fabr., Mant. Ins., ii, p. 142; Hübn., Noct., fig. 183.
*Dasycampa fornax*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 168 (1878); Ill. Typ. Lep. Het., iii, p. 15, pl. xliv, fig. 11 (1879).
? *Oporina castaneo-fasciata*, Motsch., Etud. Ent., 1860, p. 34.
*Dasycampa rubiginea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 517.

Eight specimens in Pryer's collection without locality are referable to var. *fornax*, Butl., the type of which was from Tokio; besides these I have one example from Yesso and one from Yokohama which seem to be fairly typical.

*Fornax* appears to be a good local race, and is distinguished by the bright golden-brown coloration of primaries, and the more pronounced angled central band.

*Distribution.* EUROPE.—JAPAN; YESSO.

## Genus OPORINA.

Boisduval, Ind. Meth., p. 147 (1840).

### 892. *Oporina croceago.*

*Noctua croceago*, Fabr., Mant. Ins., ii, p. 159; Hübn., Noct., fig. 189.
*Hoporina sericea*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 168 (1878); Ill. Typ. Lep. Het., ii, p. 31, pl. xxx, fig. 10 (1878).
*Oporina croceago*, Leech, Proc. Zool. Soc. Lond., 1889, p. 516.

The series of nine examples in Pryer's collection was from Yokohama. All the Japanese specimens (*sericea*, Butl.) have the outer area of secondaries tinged with pinkish-brown, and the primaries are somewhat brighter in tint than European specimens.

*Distribution.* EUROPE.—ASKOLD; JAPAN.

## Genus CERASTIS.

Guenée, Noct., i, p. 377 (1852).

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893. *Cerastis vaccinii.*

*Noctua vaccinii,* Linn., Faun. Suec., 320; Esp., Schmett., iv, pl. clxi, figs. 1, 4, 6.

*Dasycampa ardescens,* Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 364 (1879).

*Cerastis vaccinii,* Leech, Proc. Zool. Soc. Lond., 1889, p. 514.

There was a very fine series from Yokohama in Pryer's collection; all the specimens are of large size, and the majority are of the type form, but some agree with var. *mixta,* Staud.

*Distribution.* EUROPE.—JAPAN.

894. *Cerastis evelina.*

*Dasycampa evelina,* Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 363 (1879).

*Cerastis evelina,* Leech, Proc. Zool. Soc. Lond., 1889, p. 514.

A long series from Yokohama in Pryer's collection.

*Habitat.* JAPAN.

895. *Cerastis albipuncta.*

*Cerastis albipuncta,* Leech, Proc. Zool. Soc. Lond., 1889, p. 514, pl. li, fig. 10.

The type of this species, a male specimen, was probably obtained at Yokohama; it was in Pryer's collection, but without data.

*Habitat.* JAPAN.

896. *Cerastis fragariæ.*

*Bombyx fragariæ,* Esp., Schmett. Bomb., pl. lxxxvi, fig. 3.

*Cerastis fragariæ,* Leech, Proc. Zool. Soc. Lond., 1889, p. 514.

*Orrhodia fragariæ,* Staud., Rom. sur Lép., vi, p. 515 (1892).

There were specimens from Yokohama in Pryer's collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

Genus ORTHOSIA.

Ochsenheimer, Syst. Gloss. Schmett., iv.

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### 897. *Orthosia suspecta.*

*Noctua suspecta*, Hübn., Eur. Schmett. Noct., fig. 633.
*Orthosia suspecta*, Guen., Noct., i, p. 360; Leech, Proc. Zool. Soc. Lond., 1889, p. 513.
*Dyschorista suspecta*, Hb., ab. *iners*, Frr., Staud., Rom. sur Lép., vi, p. 510 (1892).

There was an example in Pryer's collection, but the exact locality was not indicated.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

### 898. *Orthosia placata*, sp. n.

Primaries ashy-grey, with a slight pinkish tinge; antemedial line fuscous-grey, oblique, indistinct; postmedial line represented by a double series of black points; submarginal line whitish, narrowly edged internally with brownish, and broadly bordered externally with fuscous; marginal line pale, serrated, and dotted with black; the reniform and orbicular stigmata are outlined in whitish and filled in with fuscous, between the stigmata there is a fuscous-brown shade extending from costa to inner margin, and there is a patch of the same colour on the costa before submarginal line. Secondaries pale fuscous-brown becoming darker towards outer margin, fringes paler preceded by a thin blackish line. Under surface greyish suffused with fuscous especially on the primaries and outer area of secondaries; all the wings have a blackish discal spot and a dusky postmedial band.

Expanse 38 millim.

One male specimen from Chia-kou-ho, taken in July.

*Habitat.* WESTERN CHINA.

### 899. *Orthosia conspicua*, sp. n.

Primaries brownish-grey with the outer marginal area darker; basal line black, extending only to median nervure, sometimes interrupted; antemedial line black but only distinct on the costa; postmedial line double, punctiform; submarginal line whitish, preceded by a darker patch, and edged with the same colour on the costa; reniform and orbicular stigmata velvety-black outlined in whitish; central shade dusky, interrupted by the reniform stigma. Secondaries pale fuscous-brown, discal dot blackish. Under surface pale greyish-brown, sericeous, paler towards inner margins; all the wings have a discal dot, and two, more or less distinct, transverse lines beyond.

Expanse 32 millim.

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One male specimen and two females from Chia-kou-ho, one male from Chang-yang, and one female from Ta-chien-lu. July and August.

*Habitat.* CENTRAL and WESTERN CHINA.

900. *Orthosia lizetta.*

*Orthosia lizetta*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 167 (1878); Ill. Typ. Lep. Het., ii, p. 30, pl. xxx, fig. 8 (1878).

A series from Yokohama in Pryer's collection, and I have also specimens from the island of Kiushiu.

Varies in tint of ground colour of the primaries, and also in the intensity of the dark markings.

*Habitat.* JAPAN and KIUSHIU.

901. *Orthosia scitula.*

*Xylophasia scitula*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 359 (1879).

Three specimens from Yokohama in Pryer's collection.

*Habitat.* JAPAN.

902. *Orthosia fausta.*

*Orthosia fausta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 513, pl. l, fig. 2.

Occurs at Yesso and Yokohama, the types were from the latter locality.

*Habitat.* JAPAN and YESSO.

903. *Orthosia cinerascens.*

*Cosmia cinerascens*, Motsch., Etud. Ent., vi, p. 34 (1857).

A fine series in Pryer's collection, probably from Yokohama; one example from Chang-yang.

*Distribution.* JAPAN; CENTRAL CHINA.

Genus MISELIA.

Ochs.; Guenée, Noct., ii, p. 53 (1852).

904. *Miselia extensa.*

*Belosticta extensa*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 357 (1879).

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*Miselia cinerea*, Butl., Trans. Ent. Soc., 1881, p. 184.
*Miselia extensa*, Leech, Proc. Zool. Soc. Lond., 1889, p. 503.

A series from Yokohama in Pryer's collection.
*Habitat.* JAPAN.

905. *Miselia funesta.*

*Miselia funesta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 503, pl. li, fig. 7.

Two examples, probably from Yokohama, in Pryer's collection.
*Habitat.* JAPAN.

Genus DICHONIA.

Hübner, Verz. bek. Schmett., p. 217 (1816).

906. *Dichonia protea.*

*Noctua protea*, Bork., iv, p. 386; Esp., Schmett., iv, pl. cl, fig. 6; Hübn., Noct., fig. 406.
*Dichonia intermissa*, Butl., Trans. Ent. Soc. Lond., 1886, p. 134.
*Dichonia protea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 506.

A fine series from Yokohama in Pryer's collection.
The secondaries in Japanese specimens are darker than those of European examples.
*Distribution.* EUROPE.—JAPAN.

Genus XYLINA.

Ochs.; Walker, Cat. Lep. Het., iii, p. 622 (1857).

907. *Xylina ingrica.*

*Xylina ingrica*, Herr.-Schäff., Eur. Schmett., ii, p. 305, pl. xcix, fig. 507 (1850).
*Agrotis ustulata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 162 (1878); Ill. Typ. Lep. Het., ii, pl. xxix, fig. 10 (1878).

There was a fine series of the *ustulata* form of this species from Yokohama in Pryer's collection. This local form seems to be constant, and does not agree with any European specimen of *ingrica* that I have seen.
*Distribution.* EUROPE.—AMURLAND; JAPAN.



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908. *Xylina saxea.*

*Xylina saxea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 537, pl. l, fig. 10.

Described from a specimen in Pryer's collection, and probably from Yokohama.

*Habitat.* JAPAN.

909. *Xylina ornithopus.*

*Noctua ornithopus*, Rott., Naturf., ix, p. 124 (1776).

*Noctua rhizolitha*, Fabr., Mant. Ins., p. 182 (1787); Hübn., Noct., fig. 242.

*Xylina pruinosa*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 197 (1878); Ill. Typ. Lep. Het., ii, p. 34, pl. xxxi, fig. 6 (1878).

*Xylina ornithopus*, Leech, Proc. Zool. Soc. Lond., 1889, p. 537.

Specimens from Yokohama were in Pryer's collection; these are rather greyer in the coloration of the primaries, but do not otherwise differ from European examples.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

Genus EUPLEXIA.

Steph.; Hampson, Fauna Brit. Ind., Moths, ii, p. 207 (1894).

910. *Euplexia lucipara.*

*Noctua lucipara*, Linn., Syst. Nat., x, p. 518; Hübn., Noct., fig. 55.

*Euplexia lucipara*, Leech, Proc. Zool. Soc. Lond., 1889, p. 504.

Specimens from Yokohama, Oiwake, and Yesso in Pryer's collection. My native collector obtained the species at Hakodate in June or July, and I took it at Sendai in September; also recorded from Tokio. I have a series from China comprising specimens from Ta-chien-lu, Chia-kou-ho, Moupin, and Chang-yang. These are generally darker than the European and Japanese examples in my collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; CENTRAL, WESTERN, and NORTHERN CHINA.

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### 911. *Euplexia semifascia.*

*Hadena semifascia*, Walk., Cat. Lep. Het., xxxiii, p. 737 (1865).

*Euplexia semifascia*, Hampson, Ill. Typ. Lep. Het., viii, pl. cxliii, fig. 11 (1891); Fauna Brit. Ind., Moths, ii, p. 212 (1894).

I have one specimen from Pu-tsu-fong, and one from Yokohama; the latter was sent to me by Mr. Mauley.

*Distribution.* NORTH-WEST HIMALAYAS; SATÁRA; NILGIRIS (*Hampson*); JAPAN; WESTERN CHINA.

### 912. *Euplexia brunnea*, sp. n.

Thorax and abdomen dark brown, head rather paler.

Primaries pale red-brown variegated with darker brown; antemedial and postmedial lines double, blackish, indistinct, the enclosed area clouded with blackish; reniform, orbicular and claviform stigmata fuscous outlined in black, the outer margin of the former edged with whitish; submarginal line brown, wavy, commencing in a brown patch on the costa; the outer margin clouded with chocolate-brown; fringes chocolate-brown marked with paler brown and preceded by a lunulated black line. Secondaries sordid white, with an elongate blackish discal mark, an indistinct postmedial blackish line, a broad submarginal fuscous band, and a blackish, diffuse, marginal line. Under surface of primaries shining pale brown, suffused with fuscous on median area; discal mark, angulated postmedial line and almost straight submarginal line, blackish; fringes tipped with blackish: secondaries shining pale brown on costal half merging into whitish on abdominal half; discal mark, wavy postmedial line, and submarginal transverse shade, blackish; fringes pale brown preceded by an interrupted black line.

Expanse 36 millim.

One female specimen taken at Pu-tsu-fong in June or July.

*Habitat.* WESTERN CHINA.

### 913. *Euplexia japonica.*

*Euplexia japonica*, Leech, Proc. Zool. Soc. Lond., 1889, p. 504, pl. li, fig. 4.

Eight specimens from Oiwake in Pryer's collection.

*Habitat.* JAPAN.

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### 914. *Euplexia bella.*

*Lamprosticta bella*, Butl., Trans. Ent. Soc. Lond., 1881, p. 183.

*Euplexia graeseri*, Staud., Rom. sur Lép., vi, p. 462, pl. vii, fig. 7 (1892).

Butler's type was from Tokio; there were two specimens from Yesso in Pryer's collection.

Staudinger was evidently not acquainted with Butler's species, or he would not have re-described it under the name *E. graeseri.*

*Distribution.* JAPAN; YESSO; AMURLAND.

### 915. *Euplexia albovittata.*

*Euplexia albovittata*, Moore, Proc. Zool. Soc. Lond., 1866, p. 57, pl. vi, fig. 16; Hampson, Fauna Brit. Ind., Moths, ii, p. 217 (1894).

One specimen from Nikko in Pryer's collection; I obtained the species at Gensan in June, Mr. Andrews captured an example at Hakodate, and I have received specimens from Wa-ssu-kow, Ta-chien-lu, Pu-tsu-fong, Wa-shan, and Chia-kou-ho. Occurs in June and July.

Staudinger (Rom. sur Lép., vi, p. 461) considers that the specimens I referred to *E. albovittata*, Moore, in my former paper, are most probably not that species at all, but referable to *E. illustrata*, Graeser (Berl. Ent. Zeit., 1888, p. 339). I am certain that the specimens in question have been correctly determined by me, as they have been compared with the type, and I am inclined to believe, after reading the description of *E. illustrata* and without seeing an example, that Graeser's insect is probably only a form of *E. albovittata.* I may add that Staudinger's remarks are based on the description of *illustrata* alone, as he also, he states, has not seen a specimen of it.

*Distribution.* SIKHIM (*Hampson*); WESTERN CHINA; COREA; JAPAN; YESSO.

### 916. *Euplexia olivacea*, sp. n.

Primaries yellowish-olive paler below the costa; costa dark olive marked with two blackish dots on middle third and three whitish ones before apex; basal line, short, black, edged outwardly with whitish, a black mark below it on the inner margin; antemedial line dark brown, inwardly edged with leaden-grey, angled towards

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inner margin; postmedial line olive-brown, indented below the median nervure and again above the submedian nervure, followed by a diffuse leaden-grey band, the space enclosed by these two lines is darker olive; reniform and orbicular stigmata whitish with yellowish-olive centres, the latter united with a whitish spot below median nervure; submarginal line whitish, sinuous, bordered outwardly with fuscous. Secondaries whitish, suffused with fuscous on basal and outer marginal areas, the latter traversed by two darker bands. Fringes fuscous preceded by a darker line. Under surface whitish, costal and outer marginal areas of primaries and the costal area of secondaries suffused with fuscous; all the wings have a dusky postmedial line and the primaries have a whitish submarginal line.

Expanse 42 millim.

One male example from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

Allied to *E.* (*Chutapha*) *costalis*, Moore, from Sikhim.

### 917. *Euplexia siderifera.*

*Hadena siderifera*, Moore, Proc. Zool. Soc. Lond., 1881, p. 357.

*Euplexia niveiplaga*, Hampson, Fauna Brit. Ind., Moths, ii, p. 208 (1894).

I have specimens from Omei-shan, Wa-shan, Ta-chien-lu, and Wa-ssu-kow; all were taken in June and July, and they agree very well with examples in my collection from Kulu.

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM; NILGIRIS (*Hampson*); WESTERN CHINA.

### 918. *Euplexia indistans.*

*Hadena indistans*, Guen., Noct., ii, p. 87 (1852).

*Astrapetis indistans*, Moore, Lep. Ceyl., iii, p. 38, pl. cxlviii, fig. 5 (1884).

*Euplexia indistans*, Hampson, Fauna Brit. Ind., Moths, ii, p. 208 (1894).

One female specimen from Kiukiang, taken in May.

*Distribution.* NORTH-WEST HIMALAYAS; BOMBAY, and throughout SOUTH INDIA and CEYLON (*Hampson*); CENTRAL CHINA.

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919. *Euplexia dolorosa.*

*Mamestra dolorosa*, Walk., Cat. Lep., xxxii, p. 667 (1865).
*Euplexia conducta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 211 (1894).

One female specimen from Kiukiang, taken in July.

*Distribution.* Throughout INDIA and CEYLON (*Hampson*); CENTRAL CHINA.

920. *Euplexia melanospila.*

*Trachea melanospila*, Koll., Hügel's Kaschmir, iv, p. 480 (1844).
*Eurois auriplena*, Walk., Cat. Lep. Het., xi, p. 557 (1857).
*Trachea atriplicis*, Koll. (*nec* Linn.), Hügel's Kaschmir, iv, p. 479 (1844).
*Hadena auriplena*, Leech, Proc. Zool. Soc. Lond., 1889, p. 508.
*Euplexia melanospila*, Hampson, Fauna Brit. Ind., Moths, ii, p. 214 (1894).
*Hadena lucia*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 195 (1878); Ill. Typ. Lep. Het., iii, p. 17, pl. xlv, fig. 2 (1879).
*Hadena kosakka*, Oberth., Etud. d'Entom., v, p. 80, pl. vii, fig. 4 (1880).
*Hadena lucia*, Oberth., *op. cit.*, vi, p. 20, pl. viii, fig. 3 (1881).
*Hadena tokiensis*, Butl., Trans. Ent. Soc. Lond., 1881, p. 186.

Of this exceedingly variable species I have a series of eighty-four specimens, fifty of which are from the following localities in China, Japan, and Corea—Ta-chien-lu, Omei-shan, Ni-tou, Chia-kou-ho, Pu-tsu-fong, Wa-shan, Chang-yang, and Ichang; Oiwake, Tokio, and Hakodate; Gensan. The others are chiefly from Kulu.

All the above-named forms are represented, and the species-maker would have almost as much scope as if he were to start naming aberrations of *Arctia caia*. Some examples have no trace whatever of white on the primaries, whilst in others there is a large, more or less quadrate, white patch on the disc of the wing, the upper portion of which is placed between the stigmata, and in some specimens is tinged with pink. Every intermediate gradation is represented between a conspicuous

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patch and the smallest speck. The amount of green composing the colour of primaries is also a variable quantity, and in one of the Kulu examples it is almost absent, leaving the insect of a blackish-grey colour. In the majority of the specimens the whitish secondaries are conspicuously bordered with fuscous, but in others they are almost entirely suffused; all the intergrades between the two extremes occur.

*Distribution.* Throughout INDIA and CEYLON (*Hampson*); CENTRAL and WESTERN CHINA; COREA; JAPAN; AMURLAND.

921. *Euplexia atriplicis.*

*Noctua atriplicis*, Linn., Syst., x, p. 517; Hübn., Noct., fig. 83.

*Hadena gnoma*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 195 (1878); Ill. Typ. Lep. Het., ii, p. 32, pl. xxxi, fig. 7 (1878).

*Trachea atriplicis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 510.

Specimens from Yokohama, Oiwake, and Gifu in Pryer's collection; I obtained examples at Gensan in July and my native collector at Nikko. *Gnoma*, Butl., is of large size but does not otherwise differ from the European form.

*Distribution.* EUROPE.—AMURLAND; COREA; JAPAN.

922. *Euplexia albidisca.*

*Hadena albidisca*, Moore, Proc. Zool. Soc. Lond., 1867, p. 59, pl. vi, fig. 17.

*Dianthœcia nivescens*, Butl., Ill. Typ. Lep. Het., vii, p. 58, pl. cxxviii, fig. 2 (1889).

*Euplexia auroviridis*, Hampson, Fauna Brit. Ind., Moths, ii, p. 215 (1894).

This species seems to have occurred, in June and July, in most of the localities in Western China visited by my collectors.

Hampson includes both *albidisca*, Moore, and *nivescens*, Butl., in *auroviridis*, Moore, but with one exception, a specimen from Chia-kou-ho, all my examples are referable to *albidisca*.

*Distribution.* DHARMSÁLA; BENGAL; NÁGAS; NILGIRIS (*Hampson*); WESTERN CHINA.

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## Genus TRIPHÆNOPSIS.

Butler, Ann. and Mag. Nat. Hist., (5) i, p. 163 (1878).

### 923. *Triphænopsis lucilla.*

*Triphænopsis lucilla*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 163 (1878); Ill. Typ. Lep. Het., ii, p. 26, pl. xxxiii, fig. 1 (1878).

The specimens in Pryer's collection were from Yokohama.

*Habitat.* JAPAN.

### 924. *Triphænopsis cinerescens.*

*Triphænopsis cinerescens*, Butl., Cist. Ent., iii, p. 133 (1885).

I obtained one example at Gensan in July, and two at Hakodate in August; the specimens in Pryer's collection were from Yesso.

In two specimens the reniform and orbicular are filled in with white, in another the outer marginal area of primaries is strongly suffused with violet-grey. All five examples, however, agree in the conspicuous characters of the under surface.

*Distribution.* YESSO; COREA.

### 925. *Triphænopsis efflorescens.*

*Triphænopsis efflorescens*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 361 (1879).

*Triphæna jankowskii*, Oberth., Etud. d'Entom., x, p. 20, pl. ii, fig. 10 (1884).

*Agrotis* (*Triphænopsis*) *efflorescens*, Staud., Rom. sur Lép., vi, p. 407 (1892).

Pryer's specimens were from Oiwake and Yokohama.

*Distribution.* AMURLAND; JAPAN.

### 926. *Triphænopsis pulcherrima.*

*Epilecta pulcherrima*, Moore, Proc. Zool. Soc. Lond., 1867, p. 54, pl. vi, fig. 3.

*Polyphænis pulcherrima*, Oberth., Etud. d'Entom., x, pl. ii, fig. 11 (1884); Leech, Proc. Zool. Soc. Lond., 1889, p. 501.

*Euplexia pulcherrima*, Hampson, Fauna Brit. Ind., Moths, ii, p. 219 (1894).

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My native collector obtained two examples at Gensan in July, and I have received specimens from Chang-yang, Wa-shan, Chia-kou-ho, Ta-chien-lu, Omei-shan, and How-kow.

In some specimens the reniform stigma is filled in with white or ochreous.

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM; NILGIRIS (*Hampson*); CENTRAL and WESTERN CHINA; COREA.

927. *Triphænopsis largeteaui.*

*Polyphænis largeteaui*, Oberth., Etud. d'Entom., vi, p. 19, pl. viii, fig. 4 (1881).

Described from Kouy-Tchéou; probably a form of *P. pulcherrima*, Moore.

*Habitat.* WESTERN CHINA.

Genus LAMPROSTICTA.

Hübner, Verz. bek. Schmett., p. 206 (1816).

928. *Lamprosticta venusta.*

*Lamprosticta venusta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 504, pl. li, fig. 5.

The type was in Pryer's collection, but the exact locality from which it came is uncertain.

*Habitat.* JAPAN.

Genus KARANA.

Moore, Lep. Atk., iii, p. 106 (1882).

929. *Karana gemmifera.*

*Plusia gemmifera*, Walk., Cat. Lep. Het., xii, p. 934 (1857).
*Anarta gemmifera*, Butl., Proc. Zool. Soc. Lond., 1881, p. 618.
*Karana decorata*, Moore, Lep. Atk., iii, p. 107 (1882).
*Euplexia gemmifera*, Hampson, Fauna Brit. Ind., Moths, ii, p. 217 (1894).
*Diphthera lætevirens*, Oberth., Etud. d'Entom., x, p. 17, pl. ii, fig. 6 (1884).
*Diphthera gemmifera*, Leech, Proc. Zool. Soc. Lond., 1889, p. 480.
? *Moma* (*Karana*) *decorata*, Moore, var. *lætevirens*, Oberth., Staud., Rom. sur Lép., vi, p. 402 (1892).

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Three specimens in Pryer's collection, probably from Yokohama. Two of these agree with *lætevirens* in having dark secondaries, and in the other the secondaries are much paler.

Staudinger considers *lætevirens* to be a pale local form of *decorata*, Moore, and places it temporarily, and very doubtfully, in the genus *Moma* with which he states it agrees better than with *Diphthera*. He gives no reason for rejecting Moore's genus *Karana*, which was founded for the reception of *decorata*, Moore.

*Distribution.* DHARMSÁLA; SIKHIM; POONA; NILGIRIS (*Hampson*); AMURLAND; JAPAN.

## Genus EUROIS.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 227 (1894).

### 930. *Eurois occulta.*

*Noctua occulta*, Linn., Syst. Nat., x, p. 514; Clerck., Icon., pl. i, fig. 6; Hübn., Noct., fig. 79.
*Eurois occulta*, Hübn., Verz. Schmett., p. 218.
*Polia occulta*, Treit., Schmett., v, 2, p. 52.
*Aplecta occulta*, Guen., Noct., ii, p. 76.

I have one specimen, taken in August at Gensan.

*Distribution.* EUROPE.—AMURLAND; COREA.

### 931. *Eurois nebulosa.*

*Noctua nebulosa*, Hufn., Berl. Mag., iii, p. 418.
*Noctua bimaculosa*, Esp., Schmett., iv, pl. cxxxii, figs. 1, 2.
*Aplecta nebulosa*, Guen., Noct., ii, p. 77.
*Eurois nebulosa*, Leech, Proc. Zool. Soc. Lond., 1889, p. 508.
*Aplecta nebulosa*, var. *askolda*, Oberth., Etud. d'Entom., v, p. 79 (1880).
*Mamestra nebulosa*, var. *askolda*, Staud., Rom. sur Lép., vi, p. 424 (1892).

There were four specimens from Oiwake in Pryer's collection; these agree with var. *askolda* in having the ground colour slaty-grey. Three other examples received from Mr. Manley of Yokohama are of the typical coloration

*Distribution.* EUROPE.—AMURLAND; JAPAN.

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932. *Eurois goliath.*

*Dichonia goliath*, Oberth., Etud. d'Entom., v, p. 68, pl. vi, fig. 7 (1880).
*Dichonia* (?) *goliath*, Staud., Rom. sur Lép., vi, p. 434 (1892).
*Mamestra goliath*, Alph., Deut. ent. Zeit., Lep., vii, p. 310 (1894).

There was one specimen in Pryer's collection; my native collector obtained one at Gensan, and I have also received four examples from Chang-yang, and three from Omei-shan. July and August.

*Distribution.* AMURLAND; COREA; CENTRAL and WESTERN CHINA; JAPAN.

933. *Eurois prasina.*

*Noctua prasina*, Fabr., Mant., p. 169.
*Eurois herbida*, Hübn., Verz. Schmett., p. 218.
*Polia herbida*, Treit., Schmett., v, 2, p. 56; Steph., Ill. Brit. Ent. Haust., iii, p. 30, pl. xxvii, fig. 3.
*Aplecta herbida*, Guen., Noct., ii, p. 75.
*Eurois prasina*, Leech, Proc. Zool. Soc. Lond., 1889, p. 507.
*Adelphagrotis prasina*, Alph., Rom. sur Lép., ix, p. 11 (1897).

One specimen from Yesso and one from Oiwake in Pryer's collection; neither of these exhibit much of the typical green coloration.

*Distribution.* EUROPE.—AMURLAND; YESSO.

934. *Eurois virens.*

*Eurois virens*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 194 (1878); Ill. Typ. Lep. Het., iii, p. 17, pl. xlv, fig. 5 (1879); Oberth., Etud. d'Entom., x, pl. ii, fig. 12 (1884); Hampson, Fauna Brit. Ind., Moths, ii, p. 231 (1894).
*Eurois magnifica*, Moore, Lep. Atk., p. 127 (1882).
*Agrotis virens*, Staud., Rom. sur Lép., vi, p. 423 (1892).

Described from Hakodate. There were two specimens from Yesso in Pryer's collection, and I obtained one example at Gensan in July; I have also received specimens from Chang-yang and Wa-shan, taken in August.

*Distribution.* DHARMSÁLA; THANDIÁNI; SIKHIM (*Hampson*); KULU; CENTRAL and WESTERN CHINA; COREA; YESSO; AMURLAND.

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### 935. *Eurois pryeri*, sp. n.

Pale olive-brown (or perhaps greenish in fresh specimens) suffused and clouded with fuscous; sub-basal line blackish, meeting a black longitudinal line from the base; antemedial line black, wavy, dentate towards the inner margin; postmedial line black, dentate, excurved beyond the cell; submarginal line blackish, wavy, edged with the lighter ground colour, preceded by a black bidentate mark above the middle and a cloud before the inner margin; reniform stigma large outlined in black, with some of the paler ground colour on outer half; orbicular stigma indistinct, the cell before this stigma is filled up with pale olive-brown interrupted by the antemedial line; between the stigmata there is a patch of the paler ground colour with a larger one below it, and below this again there is a longitudinal black bar connecting the transverse lines; a black oblique streak from the base above the inner margin; fringes fuscous preceded by a series of black points. Secondaries whitish suffused with fuscous, especially beyond the dusky central line; fringes whitish, traversed by a darker line and preceded by a diffuse, blackish line. Under surface whitish, suffused with fuscous on primaries, and powdered with brownish scales on costal area of secondaries; all the wings have an annular discal mark.

Expanse 40–42 millim.

A series of twelve specimens in Pryer's collection, locality not indicated.

*Habitat.* JAPAN.

### 936. *Eurois munda*, sp. n.

Primaries dark brownish-grey, the basal two-thirds of costa yellowish-white marked with black, apical third dotted with yellowish-white; transverse lines double, black but indistinct except towards inner margin, where they become wider; there is an interrupted olivaceous-tinged yellowish-white band on outer margin, this is inwardly bordered by a broad, black, sinuous line; the submedian area is marked with yellowish-white and olivaceous as also is the inner margin; reniform and orbicular stigmata yellowish-white, the former is somewhat quadrate in form, and has a minute dot at each corner, the latter is preceded and followed by a suffused yellowish-white mark; fringes of the ground colour variegated with olivaceous and yellowish-white, and preceded by a black lunulated line. Secondaries fuscous, fringes traversed by a paler line and preceded by a blackish one. Under surface sericeous: primaries fuscous with a short pale line and three pale dots on apical third of costa, fringes

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chequered with paler: secondaries pale brown suffused with fuscous, discal mark, wavy central line, and submarginal band, darker.

Expanse 36 millim.

One female specimen from the high plateau to the north of Ta-chien-lu.

*Habitat.* WESTERN CHINA.

The markings referred to in the above description as yellowish-white were probably olive-green when the insect was first taken.

### 937. *Eurois potanini.*

*Mamestra potanini*, Alph., Rom. sur Lép., ix, p. 137, pl. ix, fig. 10 ♂ (1897).

Alphéraky's type was from the province of Sé-Tchouen. I have received specimens from Wa-ssu-kow, Chow-pin-sa, and Omei-shan, where they were captured in June or July.

I have also one male example from Kulu.

*Habitat.* WESTERN CHINA; NORTH-WEST HIMALAYAS.

### 938. *Eurois hampsoni*, sp. n.

Primaries greyish tinged with violet, inner margin streaked with golden-brown; basal line, short, black with a large velvety-black patch below it partly concealed by long greyish hairs; antemedial line oblique, inwardly edged with golden-brown; postmedial line blackish, wavy, and slightly curved; the area enclosed by these two lines clouded with dark velvety-brown; reniform and orbicular united at their lower extremities, both are of the ground colour, but the former is streaked with purplish-red; submarginal line blackish, edged internally with golden-brown and blackish and bidentate before the inner margin; marginal line black, lunulate; fringes golden-brown at base greyish towards tips. Secondaries pale brown, suffused with fuscous except on fringes, with traces of a central transverse line. Under surface pale greyish, suffused on primaries and powdered on secondaries with fuscous; all the wings have a darker transverse band and the secondaries have a blackish discal dot; fringes golden-brown.

Expanse 40–44 millim.

Seven male specimens and ten females from Pu-tsu-fong. June and July.

*Habitat.* WESTERN CHINA.

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939. *Eurois fulminea*, sp. n.

Head and thorax reddish-brown, abdomen fuscous-brown.

Primaries chocolate-brown; antemedial line white, oblique from costa to inner margin where it meets the white postmedial line, the latter is sharply angled, and produced just above the middle; reniform and orbicular paler but ill-formed; fringes paler. Secondaries dark fuscous, fringes paler, and tinged with pinkish. Under surface pale brown tinged with pinkish and suffused with fuscous; all the wings have an indistinct discal dot and postmedial line.

Expanse 42 millim.

One female specimen from Ta-chien-lu, taken in May or June.

*Habitat.* WESTERN CHINA.

940. *Eurois viridimacula.*

*Hadena viridimacula*, Graes., Berl. Ent. Zeit., 1888, p. 331; Staud., Rom. sur Lép., vi, p. 437 (1892).

*Berrhæa japonica*, Leech, Proc. Zool. Soc. Lond., 1889, p. 507, pl. l, fig. 11.

I obtained a specimen at Oiwake in October, and there were five others in Pryer's collection; my native collector took one example in the island of Kiushiu. I have not seen an example of *viridimacula*, but as Staudinger states that my *japonica* is identical with Graeser's species I accept his determination.

*Distribution.* JAPAN; KIUSHIU; AMURLAND.

941. *Eurois* (?) *exclusa.*

*Eurois exclusa*, Leech, Trans. Ent. Soc. Lond., 1889, p. 132, pl. ix, fig. 9.

Two male specimens from Kiukiang, taken in July.

*Habitat.* CENTRAL CHINA.

Genus POLIA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 231 (1894).

942. *Polia conspicua*, sp. n.

Head black on vertex and pale brown on sides; thorax black, abdomen fuliginous.

Primaries black, marked with white as follows—A short interrupted sub-basal line; antemedial line indicated by a spot on

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costa, one about middle preceded by a brownish cloud, and a patch on the inner margin; postmedial line represented by a spot on the costa, two towards the inner margin, and a series of obscure brownish-tinged dots between; some white scales on inner margin between the terminations of transverse lines; submarginal line, interrupted, brownish-tinged; reniform and orbicular are both white with blackish centres; fringes conspicuously chequered with white, and there are four white dots on apical third of the costa of primaries. Secondaries fuliginous, paler towards base and at anal angle; fringes chequered with pale brownish. Under surface fuliginous, paler towards base of each wing and on abdominal margin of secondaries; apical third of costa of primaries dotted with whitish; these wings have an obscure pale submarginal line; secondaries have a black discal dot and a dusky central line.

Expanse 36 millim.

One male specimen from Ta-chien-lu.

*Habitat.* WESTERN CHINA.

### 943. *Polia* (?) *montana*, sp. n.

Primaries blackish-grey traversed by numerous wavy blackish lines; reniform and orbicular pale grey marked with black; submarginal line black, dentate, dotted with white; fringes white, conspicuously chequered with black. Secondaries fuscous, paler towards the base and the outer margin. Under surface whitish suffused with fuscous, especially on outer margins; all the wings have a darker postmedial diffuse line.

Expanse 38 millim.

One male specimen taken at Ta-chien-lu in May or June.

*Habitat.* WESTERN CHINA.

## Genus DASYSTERNUM.

Staudinger, Iris, viii, p. 327 (1896).

### 944. *Dasysternum tibetanum.*

*Dasysternum tibetanum*, Staud., Iris, viii, p. 327, pl. vi, fig. 9 (1896).

One example taken in May or June at Ta-chien-lu. Staudinger's type was from the country between Lob-Noor and Kuku-Noor.

*Distribution.* THIBET; WESTERN CHINA.

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## Genus HECATERA.

Ochs.; Walker, Cat. Lep. Het., iii, p. 508 (1857).

### 945. *Hecatera confusa*, sp. n.

Head and thorax greyish-white, the latter marked with black and white; abdomen fuscous-grey.

Primaries white, suffused and clouded with light and dark grey; sub-basal line black, straight, its lower extremity touching a longitudinal black line from the base; antemedial line black edged with white, wavy, bluntly dentate on submedian nervure, preceded by a conspicuous dark grey patch on the costa, and followed by a transverse shade of the same colour, the latter traversed by an interrupted and diffuse black line; postmedial line black, edged with white, dentated, excurved beyond the cell, shaded on both sides with dark grey; submarginal line black, wavy, interrupted towards costa and inner margin, the costa between this line and the postmedial is dark grey with three whitish dots upon it; the outer marginal area immediately beyond the submarginal is white and band-like, the reniform indistinct; fringes grey, chequered with white on outer half, and preceded by a black line with black dots upon it. Secondaries dark fuscous, with a small whitish mark on outer margin before the anal angle, fringes tipped with white. Under surface of primaries fuscous, greyish on basal area, and on the costa and the outer margin, discal mark and postmedial curved line blackish; submarginal band dusky; secondaries greyish, powdered with fuscous scales, discal mark and line beyond blackish; submarginal band dusky; fringes as above.

Expanse 30 millim.

One female specimen from Ta-chien-lu, taken in August.
*Habitat.* WESTERN CHINA.

### 946. *Hecatera dysodea.*

*Noctua dysodea*, Hübn., Noct., pl. xvi, fig. 47.
*Noctua chrysozona*, Bork., Eur. Schmett., iv, p. 264.
*Hecatera dysodea*, Guen., Noct., ii, p. 28 (1852).

One typical example from the high plateau to the north of Ta-chien-lu. I have also one specimen with a dark central band, which appears to be referable to this species, from the Goorais Valley, Kashmir.

*Distribution.* EUROPE.—WESTERN CHINA; KASHMIR.

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### 947. *Hecatera fasciata.*

*Hecatera fasciata*, Leech, Trans. Ent. Soc. Lond., 1889, p. 134, pl. ix, fig. 8.

One female specimen, the type, from Kiukiang, taken in June.

*Habitat.* CENTRAL CHINA.

## Genus DIPTERYGIA.

Stephens, Ill. Brit. Ent., Haust., ii, p. 167 (1829).

### 948. *Dipterygia scabriuscula.*

*Noctua scabriuscula*, Linn., Syst. Nat., x, p. 516; Clerck., Icon., pl. i, fig. 8.

*Noctua pinastri*, Linn., Faun. Suec., p. 315; Hübn., Noct., fig. 246.

*Dipterygia pinastri*, Steph., Ill. Brit. Ent., Haust., ii, p. 168; Leech, Proc. Zool. Soc. Lond., 1889, p. 488.

*Dipterygia scabriuscula*, Hampson, Fauna Brit. Ind., Moths, ii, p. 235 (1894).

*Hadena caliginosa*, Walk., Cat. Lep. Het., xv, p. 1729 (1858).

Pryer's specimens were from Yokohama and Oiwake; my native collector obtained the species at Hakodate in June and July. I have received examples from Chang-yang, Chia-kou-ho, Ni-tou, Ta-chien-lu, Pu-tsu-fong, Wa-ssu-kow, Wa-shan, Chow-pin-sa, and the province of Kwei-chow. Occurs in June and July.

Japanese and Chinese specimens are darker than European examples and are referable to var. *caliginosa*, Walk., from North China.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; NORTHERN, CENTRAL, and WESTERN CHINA.

### 949. *Dipterygia japonica.*

*Dipterygia japonica*, Leech, Proc. Zool. Soc., 1889, p. 489, pl. l, fig. 9.

The type, and only example of the species that I have seen, was in Pryer's collection; it was probably from the Yokohama district.

*Habitat.* JAPAN.



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950. *Dipterygia grata.*

*Leptina grata*, Butl., Trans. Ent. Soc. Lond., 1881, p. 172.
*Antha pretiosa*, Staud., Rom. sur Lép., vi, p. 448, pl. vii, fig. 6 (1892).
*Dipterygia grata*, Hampson, Fauna Brit. Ind., Moths, ii, p. 237 (1894).

Several specimens from Oiwake in Pryer's collection; I obtained the species at Gensan, and have received one example from the province of Kwei-chow; the latter is rather darker.

Staudinger gives a good figure of this species, which he re-describes as *pretiosa*, and creates the genus *Antha* for the reception of his single female example.

*Distribution.* NÁGAS (*Hampson*); JAPAN; COREA; WESTERN CHINA.

Genus EUSCOTIA.

Butler, Ill. Typ. Lep. Het., vii, p. 47 (1889).

951. *Euscotia saga.*

*Lithophane saga*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 198 (1878); Ill. Typ. Lep. Het., iii, p. 18, pl. xlv, fig. 9 (1879).
*Rhizogramma aurilegula*, Oberth., Etud. d'Entom., v, p. 71, pl. iii, fig. 16 (1880).
*Rhizogramma saga*, Staud., Rom. sur Lép., vi, p. 448 (1892).

Appears to be fairly common at Yokohama.

*Distribution.* AMURLAND; COREA; JAPAN.

952. *Euscotia* (?) *fraterna.*

*Cucullia fraterna*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 198 (1878); Ill. Typ. Lep. Het., iii, p. 18, pl. xlv, fig. 10 (1879).

There were specimens from Yokohama in Pryer's collection. The type was from Hakodate.

*Habitat.* JAPAN and YESSO.

Genus CUCULLIA.

Schrank, Fauna Boica, ii, 2, p. 157 (1802).

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953. *Cucullia asteris.*

*Noctua asteris*, Schiff., Wien. Verz., p. 312; Hübn., Noct., fig. 260.
*Cucullia asteris*, Treit., Schmett., v, 3, 118 (1820).

Two examples, probably from Yokohama, in Pryer's collection. A dark well-marked specimen has also been received from Pu-tsu-fong, where it was taken in June or July.

*Distribution.* EUROPE.—AMURLAND; JAPAN; WESTERN CHINA.

954. *Cucullia perforata.*

*Cucullia perforata*, Brem., Bull. de l'Acad. Petr., 1861; Lep. Ost.-Sib., p. 54, pl. v, fig. 14 (1864); Oberth., Etud. d'Entom., x, p. 24, pl. iii, fig. 1 (1884).

There was one example from Yesso in Pryer's collection. My native collector took a specimen at Gensan in July, and I obtained one at Hakodate in August.

*Distribution.* AMURLAND; NORTH CHINA; COREA; YESSO.

955. *Cucullia grisescens*, sp. n.

Head and thorax bluish-grey, collar with a blackish edge; abdomen fuscous-brown.

Primaries obscure brown, suffused with bluish-grey on basal half, markings inconspicuous; basal line indicated by a fuscous dot on the costa; indications of a highly dentate, fuscous, antemedial line, rather broad on costal area; postmedial line not traceable below the costa; there are three interrupted fuscous lines on outer marginal area, and an oblique fuscous line from before the middle of the inner margin interrupted by the submedian nervure; a patch of brownish hairs at base of the inner margin; reniform and orbicular stigmata greyish, but very obscure; fringes paler than the ground colour. Secondaries fuscous, with dusky discal lunule. Under surface fuscous inclined to greyish on the discal area of each wing, and tinged with brownish at base of the primaries and on the costal area of the secondaries; discal lunule of secondaries blackish; interrupted transverse lines on outer marginal area of the primaries as on the upper surface.

Expanse 62 millim.

One female specimen from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

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956. *Cucullia pullata.*

*Callænia pullata*, Moore, Proc. Zool. Soc. Lond., 1881, p. 358.
*Cuculia pullata*, Hampson, Fauna Brit. Ind., Moths, ii, p. 239 (1894).

One female specimen from Chia-kou-ho, taken in July.

*Distribution.* DALHOUSIE; SIKHIM (*Hampson*); WESTERN CHINA.

Genus CALOCAMPA.

Stephens, Ill. Brit. Ent., Haust., ii, p. 172 (1829).

957. *Calocampa exoleta.*

*Noctua exoleta*, Linn., Syst Nat., x, p. 515; Hübn., Noct., fig. 244.
*Calocampa fumosa*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 196 (1878); Ill. Typ. Lep. Het., ii, p. 33, pl. xxxi, fig. 8 (1878).
*Calocampa exoleta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 539.

The specimens in Pryer's collection were from Yokohama; these have the base of primaries and the thorax somewhat darker than European examples in my collection.

Staudinger records *C. vetusta* from Amurland, and remarks that *C. exoleta* should also occur there, as both species are found in Central Asia.

*Distribution.* EUROPE.—CENTRAL ASIA; JAPAN.

958. *Calocampa formosa.*

*Calocampa formosa*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 196 (1878); Ill. Typ. Lep. Het., ii, p. 33, pl. xxxi, fig. 9 (1878).

Occurs at Yokohama and Tokio.

*Habitat.* JAPAN.

Genus ACRONYCTA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 240, (1894).

959. *Acronycta leporina.*

*Noctua leporina*, Linn., Syst. Nat., x, p. 511 (1758).
*Acronycta leporina*, Treit., Schmett., v, 1, p. 5; Leech, Proc. Zool. Soc. Lond., 1889, p. 477.

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*Acronycta leporina*, var. *leporella*, Staud., Rom. sur Lép., vi, p. 383 (1892).

There were two specimens from Oiwake in Pryer's collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

960. *Acronycta cuspis.*

*Noctua cuspis*, Hübn., Noct., fig. 504.
*Acronycta cuspis*, Treit., Schmett., v, 1, p. 32 (1825); Leech, Proc. Zool. Soc. Lond., 1889, p. 474.
*Acronycta leucocuspis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 78 (1878); Ill. Typ. Lep. Het., iii, p. 12, pl. xliv, fig. 2 (1879).

Two specimens from Oiwake in Pryer's collection, and I obtained one example at Gensan in July.

*Distribution.* EUROPE.—AMURLAND; JAPAN; COREA.

961. *Acronycta psi.*

*Noctua psi*, Linn., x, p. 574.
*Acronycta psi*, Treit., Schmett., v, 1, p. 30; Dup., Hist. Nat. Lép. France, vi, p. 218, pl. lxxxiii, fig. 1.

I obtained specimens at Gensan and Fushiki in the months of June and July, and the species is recorded from several localities in Amurland.

One example from Fushiki has darker secondaries than any European specimen that I have seen.

*Distribution.* EUROPE.—AMURLAND; COREA.

962. *Acronycta tridens.*

*Noctua tridens*, Esp., Schmett., iv, pl. 115, figs. 5, 8.
*Acronycta tridens*, Treit., Schmett., v, 1, p. 26 (1825); Leech, Proc. Zool. Soc. Lond., 1889, p. 475.
*Acronycta increta*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 78 (1878); Ill. Typ. Lep. Het., iii, p. 12, pl. xliv, fig. 3 (1879).

I have specimens from Yokohama, Gensan, and Wa-ssu-kow; these are referable to *increta*, Butl., which I consider to be a large dark form of *A. tridens*.

*Distribution.* EUROPE.—AMURLAND; JAPAN; COREA; WESTERN CHINA.

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963. *Acronycta major.*

*Acronycta major*, Brem., Lep. Ost.-Sib., p. 48, pl. v, fig. 7 (1864).
*Triæna anædina*, Butl., Trans. Ent. Soc. Lond., 1881, p. 19.

I have received specimens from Chang-yang, Omei-shan, Wa-shan, Ta-chien-lu, Chia-kou-ho, and the Kurile islands. There were examples from Yokohama in Pryer's collection, and I obtained the species at Hakodate.

*Distribution.* AMURLAND; JAPAN; YESSO; NORTHERN, CENTRAL, and WESTERN CHINA; COREA.

964. *Acronycta hercules.*

*Acronycta hercules*, Feld., Reise Nov. Lep., iv, pl. cix, fig. 2 (1874).
*Acronycta luteicoma*, var. *elongata*, Oberth., Etud. d'Entom., x, p. 20, pl. ii, fig. 3 (1884).

There were specimens from Oiwake in Pryer's collection, and the species has been recorded from several localities in Amurland.

*Distribution.* AMURLAND; JAPAN.

965. *Acronycta paucinotata.*

*Acronycta paucinotata*, Hampson, Fauna Brit. Ind., Moths, ii, p. 240 (1894).

The type of this species, a female from Kashmir, is in my collection; I have also one example of the same sex from Ta-chien-lu, where it was captured in August.

*Distribution.* KASHMIR; WESTERN CHINA.

966. *Acronycta strigosa.*

*Noctua strigosa*, Fabr., Mant., ii, p. 142.
*Noctua favillacea*, Esp., Schmett., iv, pl. cxxvii, fig. 4.
*Hyboma strigosa*, Hübn., Verz. Schmett., p. 200.
*Acronycta strigosa*, Treit., Schmett., v, 1, p. 23.

I met with the species at Gensan in July, and at Hakodate in August. There were several specimens from Yesso and Oiwake in Pryer's collection, and one example was received from Ta-chien-lu; the latter is rather darker than is usual in this species.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA; WESTERN CHINA.

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967. *Acronycta alni.*

*Noctua alni*, Linn., Syst. Nat., xii, p. 845; Hübn., Noct., fig. 3.
*Acronycta alni*, Treit., Schmett., v, 1, p. 16.

One example from Yesso in Pryer's collection.
*Distribution.* EUROPE.—AMURLAND; YESSO.

968. *Acronycta fasciata.*

*Hyboma fasciata*, Moore, Lep. Ceyl., iii, p. 5, pl. cxiv, fig. 4 (1884).
*Hyboma divisa*, Moore, Proc. Zool. Soc. Lond., 1888, p. 409; Butl., Ill. Typ. Lep. Het., vii, p. 45, pl. cxxv, fig. 7 (1889).
*Acronycta fasciata*, Hampson, Fauna Brit. Ind., Moths, ii, p. 243 (1894).

Specimens from Yokohama in Pryer's collection; I took one example at Nagahama in July, and my native collector obtained the species at Nikko. I have also received examples from Chang-yang and Omei-shan, where they were taken in July and August.

Varies in expanse from 30–42 millim.

*Distribution.* KÁNGRA; DHARMSÁLA; CEYLON; RANGOON (*Hampson*); KULU; KASHMIR; JAPAN; CENTRAL and WESTERN CHINA.

969. *Acronycta subornata.*

*Acronycta subornata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 477, pl. l, fig. 6.

Occurs at Yokohama and Gensan in July.
*Distribution.* JAPAN; COREA.

970. *Acronycta brumosa.*

*Acronycta brumosa*, Guen., Noct., i, p. 52 (1852); Leech, Proc. Zool. Soc. Lond., 1889, p. 476.
*Acronycta carbonaria*, Graes., Berl. Ent. Zeit., 1889, p. 252; Staud., Rom. sur Lép., vi, p. 390 (1892).

All my examples of this species are from Yokohama, and were in Pryer's collection. Some of the specimens are identical with typical *A. brumosa*, but others are paler in colour, whilst others again are darker than the type.

*Distribution.* NORTH AMERICA; JAPAN; AMURLAND.

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### 971. *Acronycta nigricans*, sp. n.

Head and thorax dark grey mixed with paler; abdomen fuscous-grey.

Primaries grey, clouded and suffused with darker grey and blackish; there are some blackish dots on the costa, and three white ones towards apex; transverse lines double, black, sinuous; the postmedial line incurved below the middle and marked with white towards inner margin; submarginal line blackish, sinuous, interrupted and edged with whitish; reniform and orbicular stigmata outlined in black, the former partly obscured by the blackish central shade and the latter with a central blackish dot, a diffuse pale spot between them; there is a blackish transverse bar below the median nervure, and a curved one, in a line with the last, from postmedial to outer margin; fringes dark grey, marked with black, and preceded by a series of black > shaped marks. Secondaries white, the venation fuscous especially towards outer margin; fringes white preceded by an interrupted fuscous line. Under surface of primaries fuscous, paler on costa and on the outer margin; secondaries white with a blackish discal lunule and some dark scales on the costal area.

Expanse 44–48 millim.

One male specimen and four females from Wa-shan. July.

In one female example the basal area of the under surface of primaries is pale fuscous.

*Habitat.* WESTERN CHINA.

Perhaps nearest allied to the dark form of *A. rumicis*, from which it is at once separated by the white secondaries. From *A. brumosa*, Guen., it can be distinguished by the darker coloration and different marking of primaries, especially with regard to the stigmata.

### 972. *Acronycta pruinosa.*

*Acronycta pruinosa*, Guen., Noct., i, p. 53 (1852); Hampson, Fauna Brit. Ind., Moths, ii, p. 242 (1894).
*Polia soluta*, Walk., Cat. Lep. Het., xxxiii, p. 723 (1865).
*Plataplecta pruinosa*, Moore, Lep. Ceyl., iii, p. 5, pl. cxliv, fig. 3 (1884).

Specimens from Oiwake and Yokohama in Pryer's collection, and I have others from the island of Kiushiu.

*Distribution.* NORTH-WEST HIMALAYAS; SILHET; CEYLON; JAVA (*Hampson*); JAPAN; KIUSHIU.

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973. *Acronycta consanguis.*

*Acronycta consanguis*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 358 (1879).
*Pharetra consanguis*, Cotes and Swinh., Cat. Moths, Ind., p. 122 (1887).
*Acronycta pruinosa*, Hampson, Fauna Brit. Ind., Moths, ii, p. 242 (1894).

A fine series from Yokohama in Pryer's collection; I have also received specimens from Hakodate and Chang-yang. The latter, which were taken in July, have the black markings fainter than Japanese examples.

*Distribution.* JAPAN; YESSO; AMURLAND; and KASAULI (C. and S.).

974. *Acronycta asiatica.*

*Acronycta asiatica*, Pouj., Ann. Soc. Ent. France, 1888, p. xx.

Described from Moupin. Possibly a form of *A. consanguis*, Butl.

*Habitat.* WESTERN CHINA.

975. *Acronycta sinens.*

*Orthosia sinens*, Walk., Cat. Lep. Het., xi, p. 746 (1857).
*Momaphana sinens*, Hampson, Ill. Typ. Lep. Het., viii, p. 71, pl. cxliv, fig. 6 (1891).
*Thalatha sinens*, Walk., Journ. Linn. Soc. Lond., vi, p. 187 (1863).
*Acronycta sinens*, Hampson, Fauna Brit. Ind., Moths, ii, p. 241 (1894).

One example taken in July at Chia-kou-ho.

*Distribution.* NILGIRIS; MOULMEIN; BORNEO (*Hampson*); WESTERN CHINA.

976. *Acronycta rumicis.*

*Noctua rumicis*, Linn., Syst. Nat., x, p. 516; Hübn., Noct., fig. 9.
*Acronycta rumicis*, Treit., Schmett., v, 1, p. 38.
*Pharetra rumicis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 477.

Appears to be widely distributed in Western China and occurs also at Chang-yang and Kiukiang. I took specimens in various parts of Japan, and at Hakodate,

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and also at Gensan, in July. My native collector met with the species at Nikko. Eastern Asian specimens are usually considerably darker than the European type.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; NORTHERN, CENTRAL, and WESTERN CHINA.

977. *Acronycta longa.*

*Acronycta longa*, Guen., Noct., i, p. 54 (1852).
*Acronycta lutea*, Brem., Lep. Ost.-Sib., p. 48, pl. iv, fig. 7 (1864); Oberth., Etud. d'Entom., x, p. 18, pl. ii, fig. 14 (1884); Staud., Rom. sur Lép., vi, p. 391 (1892).
*Pharetra leucoptera*, Butl., Trans. Ent. Soc. Lond., 1881, p. 595.
*Pharetra longa*, Leech, Proc. Zool. Soc. Lond., 1889, p. 478.

Occurs at Oiwake, Yokohama, Gensan, and Chang-yang. The secondaries are whitish in the type and bright yellow in var. *lutea*.

*Distribution.* NORTH AMERICA; JAPAN; COREA; AMURLAND.

978. *Acronycta digna.*

*Thalpophila digna*, Butl., Trans. Ent. Soc. Lond., 1881, p. 176.
*Acronycta michaël*, Oberth., Etud. d'Entom., x, p. 18, pl. ii, fig. 13 (1884).
*Acronycta digna*, Leech, Proc. Zool. Soc. Lond., 1889, p. 475.

I have specimens from Yokohama, Oiwake, Gensan, Chang-yang, Ta-chien-lu, Wa-shan, and Chia-kou-ho. There appears to be two broods of this species in China, or the period of emergence is an unusually long one, as examples were taken in each month from May to August.

The species varies considerably in size, and in the intensity of the ochreous coloration of the secondaries.

*Distribution.* JAPAN; COREA; AMURLAND; CENTRAL and WESTERN CHINA.

979. *Acronycta subviridis.*

*Plataplecta subviridis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 195 (1878); Ill. Typ. Lep. Het., ii, p. 32, pl. xxxi, fig. 3 (1878).

I obtained the species in Satsuma in May; there were specimens from Yokohama in Pryer's collection, and I have

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received others from Chang-yang and Ni-tou; these last, which are rather greener than Japanese examples, were taken in May and July.

*Distribution.* JAPAN; CENTRAL and WESTERN CHINA.

980. *Acronycta* (?) *plumbea.*

*Plataplecta plumbea*, Butl., Trans. Ent. Soc. Lond., 1881, p. 184.

Described from Tokio. I have been unable to see the type, and do not know anything of the species beyond the description.

*Habitat.* JAPAN.

Genus CRANIOPHORA.

Snellen, De Vlinders van Nederland, p. 262 (1867).

981. *Craniophora ligustri.*

*Noctua ligustri*, Fabr., Mant., p. 172; Hübn., Noct., fig. 21.
*Acronycta ligustri*, Treit, Schmett., v, i, p. 20 (1825).
*Craniophora ligustri*, Snell., Vlinders, p. 262 (1867); Staud., Rom. sur Lép., vi, p. 393 (1892).

One typical example from Oiwake in Pryer's collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

982. *Craniophora obscura*, sp. n.

Primaries dark grey mottled and clouded with black, costa paler dotted with black; transverse lines black, the antemedial, double, wavy; postmedial, double, wavy and curved below the middle, the enclosed space spotted with whitish; orbicular stigma outlined in white, reniform not clearly defined, except on the outer edge which is black dotted with whitish; fringes grey chequered with paler, preceded by a series of whitish angular marks enclosing black dots. Secondaries whitish in the male, suffused with fuscous in the female, with a blackish discal mark and a postmedial line; the outer marginal area blackish; fringes as on primaries. Under surface whitish powdered with fuscous, especially in the female; primaries are suffused with blackish on discal and outer marginal areas, discal mark and postmedial line black; secondaries have a conspicuous black discal mark, some blackish scales between it and the costa, and an interrupted black postmedial line.

Expanse 40–44 millim.

One example of each sex from Ni-tou, one female

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specimen from Pu-tsu-fong, and one from the province of Kwei-chow. Occurs in June and July.

*Habitat.* WESTERN CHINA.

### Genus TOXOCAMPA.

Guenée, Ann. Soc. Ent. Fr., 1841, p. 75.

#### 983. *Toxocampa recta.*

*Toxocampa recta*, Brem., Lep. Ost.-Sib., p. 98, pl. viii, fig. 9 (1864).

*Toxocampa lilacina*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 289 (1879); Ill. Typ. Lep. Het., xxxii, fig. 8 (1878).

I obtained examples at Fushiki and Nagahama in July, at Sendai and Nikko in September, and at Yokohama in October. There were specimens from the locality last named in Pryer's collection, and others were taken by my native collector in the island of Kiushiu, and also at Gensan in the month of August. One example was received from Kiukiang, where it was captured in July.

Specimens more or less tinted with lilacine are not at all uncommon.

*Distribution.* AMURLAND; JAPAN; KIUSHIU; COREA; CENTRAL CHINA.

#### 984. *Toxocampa maxima.*

*Toxocampa maxima*, Brem., Lep. Ost.-Sib., pl. v, fig. 17 (1864).

*Toxocampa enormis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 291 (1878); Ill. Typ. Lep. Het., ii, p. 38, pl. xxxii, fig. 9 (1878).

*Eccrita maxima*, Staud., Rom. sur Lép., vi, p. 598 (1892).

Of this species, which varies in colour from ochreous-grey to violet-grey, there were examples from Yokohama and Oiwake in Pryer's collection, and I obtained specimens at Shimoneseki and Gensan in July. It has also been recorded from Nikko and Tokio.

*Distribution.* AMURLAND; JAPAN; COREA.

#### 985. *Toxocampa vulcanea.*

*Toxocampa vulcanea*, Butl., Trans. Ent. Soc., 1881, p. 192.

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Described from Tokio; there was one specimen from Asamayama in Pryer's collection.

*Habitat.* JAPAN.

986. *Toxocampa limosa.*

*Ophiusa limosa*, Treit., Schmett., v, 3, p. 298 (1820).
*Noctua limosa*, Frey., Neue Beitr., iii, pl. 233.
*Toxocampa limosa*, Guen., Noct., ii, p. 428 (1852); Leech, Proc. Zool. Soc., 1889, p. 544.
*Toxocampa limosa*, var. *nigricostata*, Graes., Staud., Rom. sur Lép., vi, p. 600 (1892).

Specimens from Oiwake in Pryer's collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

Genus APPANA.

Moore, Proc. Zool. Soc. Lond., 1881, p. 355.

987. *Appana indica.*

*Phlogophora indica*, Moore, Proc. Zool. Soc. Lond., 1876, p. 57.
*Appana indica*, Moore, Proc. Zool. Soc. Lond., 1881, p. 355.
*Conservula indica*, Hampson, Fauna Brit. Ind., Moths, ii, p. 246 (1894).
*Appana cingalesa*, Moore, Lep. Ceyl., iii, p. 548, pl. 214, fig. 6 ♀ (1887).

I have specimens from Chia-ting-fu, Pu-tsu-fong, and Chia-kou-ho, taken in July, and others from Chang-yang taken in August.

*Distribution.* KULU; SIKHIM; NILGIRIS; CEYLON; CENTRAL and WESTERN CHINA.

Genus PRODENIA.

Guenée, Noct., i, p. 159 (1852).

988. *Prodenia littoralis.*

*Prodenia littoralis*, Boisd., Faun. Ent. Madag., Lep., p. 91, pl. xiii, fig. 8 (1833); Hampson, Fauna Brit. Ind., Moths, ii, p. 247 (1894).

There were specimens, probably from Yokohama, in Pryer's collection, and I received a number of examples from Chang-yang and Ichang.

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I may note that I took this species in the Canary Islands in April.

*Distribution.* MEDITERRANEAN SUB-REGION, and throughout the tropical and sub-tropical zones of the OLD WORLD (*Hampson*).

## Genus CALLOPISTRIA.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 253 (1894).

### 989. *Callopistria purpureofasciata.*

*Noctua purpureofasciata*, Piller, Iter per Poseg., pl. 6, 2 (1783).

*Noctua lagopus*, Esp., Schmett., iv, pl. cxxv, fig. 7 (1788).

*Eriopus purpureofasciata*, Staud., Rom. sur Lép., vi, p. 453 (1892).

*Callopistria obscura*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 200 (1878); Ill. Typ. Lep. Het., iii, p. 21, pl. xlvi, fig. 3 (1879).

*Callopistria purpureofasciata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 536.

I obtained this species in Satsuma in May, and at Nagasaki and Fusan in June. The specimens in Pryer's collection were from Yokohama, and I have received others from Hakodate, Nikko, Gensan, Ningpo, Kiukiang, Chang-yang, Omei-shan, and Ta-chien-lu.

Varies in the amount of purple suffusion on primaries; some are entirely without the suffusion, as in var. *obscura*, Butl.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; KIUSHIU; COREA; CENTRAL, EASTERN, and WESTERN CHINA.

### 990. *Callopistria repleta.*

*Callopistria repleta*, Walk., Cat. Lep. Het., xii, p. 865 (1857); Hampson, Fauna Brit. Ind., Moths, ii, p. 255 (1894).

The specimens in Pryer's collection were probably from the Yokohama district; I obtained one example at Gensan in June, and have received others from Chang-yang, Wa-shan, Chia-kou-ho, and Omei-shan. Occurs in May, June, and July.

*Distribution.* NORTH-WEST HIMALAYAS (*Hampson*); JAPAN; COREA; CENTRAL and WESTERN CHINA.

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991. *Callopistria rivularis.*

*Callopistria rivularis*, Walk., Cat. Lep. Het., xii, p. 867 (1857); Hampson, Ill. Typ. Lep. Het., ix, pl. clxiii, fig. 2 (1893); Fauna Brit. Ind., Moths, ii, p. 255 (1894).

There were three specimens in Pryer's collection, and I received one from Chow-pin-sa, where it was captured in May or June.

*Distribution.* NORTH-WEST HIMALAYAS; NILGIRIS; CEYLON; FIJI (*Hampson*); JAPAN; WESTERN CHINA.

992. *Callopistria venata*, sp. n.

Primaries deep olivaceous-brown, venation violaceous-brown; subbasal line indistinct, but with some whitish marks between it and the whitish, slightly curved, antemedial line; the latter is angled before reaching the inner margin, and is bordered externally with the ground colour; postmedial line curved and recurved, whitish, bordered internally with the ground colour and followed by a violaceous band; marginal line white, interrupted and preceded by some white streaks and spots; these are most distinct towards apex; reniform and orbicular of the ground colour, outlined in whitish, the former with a violaceous central line; fringes of the ground colour chequered with white. Secondaries fuscous with a blackish discal dot, fringes whitish marked with fuscous at extremities of the nervules. Head and thorax agree in colour with the primaries, abdomen with the secondaries. Under surface of primaries brownish, becoming paler towards the base and on the inner margin, there is a white spot and some dots of the same colour on costa towards apex and other white spots on the marginal area indicating a submarginal band: secondaries whitish sparingly powdered with brownish scales; discal mark brownish, angled; central line brownish, wavy; there is a brownish cloud at outer angle and from this a diffuse brownish band to the inner margin; all the fringes are dark brown chequered with white.

Expanse 36 millim.

One male specimen and two females from Chang-yang, one female from Ichang. May, July, and August.

*Habitat.* CENTRAL CHINA.

Allied to *C. rivularis*, Walk.

993. *Callopistria albomacula*, sp. n.

Head and thorax brownish-grey; abdomen rather paler, ringed with whitish. Primaries greyish with a faint violet tinge, clouded

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with blackish; sub-basal line whitish, angled, indistinct; antemedial line whitish, double, elbowed at submedian nervure; postmedial line whitish, edged with blackish, curved beyond cell and recurved before the inner margin; orbicular stigma indistinct, reniform outlined in white, its lower end placed on a white spot; there are two whitish lines from costa before the apex, the first short and wavy, the second longer and finer extending to a white oblique spot; fringes fuscous-grey chequered with whitish. Secondaries fuscous, discal mark rather darker; fringes paler intersected by a dark line. Under surface of primaries dark fuscous with a whitish dot on costa towards apex and another on outer margin, a whitish interrupted line from the latter to apex; secondaries greyish thickly powdered with fuscous scales on basal area and suffused with the same colour on outer marginal area; discal mark and transverse line darker.

Expanse 28 millim.

One female specimen from Pu-tsu-fong, and one from Chow-pin-sa, taken in June or July.

*Habitat.* WESTERN CHINA.

Allied to *C. rivularis*, Walk., but separable from that species by the different character of the reniform stigma and the curvature of the transverse lines.

994. *Callopistria exotica.*

*Eriopus exotica*, Guen., Noct., ii, p. 194 (1852).

*Callopistria duplicans*, Walk., Cat. Lep. Het., xii, p. 866 (1857); Hampson, Fauna Brit. Ind., Moths, ii, p. 255 (1894).

*Callopistria exotica*, Leech, Proc. Zool. Soc. Lond., 1889, p. 536.

Specimens from Yokohama in Pryer's collection; I obtained the species in Satsuma in May, and at Nagasaki in June, and my native collector at Gensan and Ningpo in August. I have also received examples from Kiukiang, Ta-chien-lu, Moupin, and Omei-shan.

*Distribution.* FORMOSA; SILHET; MOULMEIN (*Hampson*); JAPAN; KIUSHIU; COREA; NORTHERN, CENTRAL, and WESTERN CHINA.

995. *Callopistria æthiops.*

*Callopistria æthiops*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 200 (1878); Ill. Typ. Lep. Het., iii, p. 21, pl. xlvi, fig. 4 (1879); Hampson, Fauna Brit. Ind., Moths, ii, p. 256 (1894).

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I have specimens from Nikko, Hakone, Gensan. The species occurs in June, July, and August.

Differs from *C. exotica* in the character of the postmedial band, which in *C. æthiops* is represented by a curved line.

*Distribution.* NILGIRIS (*Hampson*); JAPAN; COREA.

## Genus RUSINA.

Stephens, Ill. Brit. Ent., Haust., ii, p. 111 (1829).

### 996. *Rusina ripleyi.*

*Rusina ripleyi*, Holl., Trans. Amer. Entom. Soc., xvi, p. 74 (1889).

Described from Japan.

## Genus PHALACRA.

Staudinger, Rom. sur. Lép., vi, p. 568 (1892).

### 997. *Phalacra gemella.*

*Perigea gemella*, Leech, Proc. Zool. Soc. Lond., 1889, p. 492, pl. liii, fig. 12.
*Phalacra gemella*, Staud., Rom. sur. Lép., vi, p. 568 (1892).

Five examples taken by my native collector at Gensan in August and September; I have also received four specimens from Mr. Manley of Yokohama, and there was one in Pryer's collection.

Dr. Staudinger seems to take exception to my having referred this species to *Perigea* and creates the new genus *Phalacra* for its reception. He is, however, unable to suggest the proper position for this genus and places it after species which he puts, with single and double query marks, in *Erastria*, thus indicating that he himself is not at all certain about the generic location of those species. As pointed out under *Karana gemmifera* he prefers to place a species in one of two doubtful genera rather than in a genus which has been purposely founded for it.

His own classification in the "Catalog" has long been obsolete, but entomologists have now the advantage of the able work of Sir George F. Hampson, and this latter is adopted with slight modifications in the present paper.

*Distribution.* JAPAN; COREA; AMURLAND.



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## Genus AMYNA.

Guenée, Noct., i, p. 406 (1852).

### 998. *Amyna pulverea*, sp. n.

Primaries brown dusted with grey and marked with grey on the costa; transverse lines indistinct, all but the submarginal blackish-brown edged with grey; antemedial dentate above the inner margin; postmedial excurved beyond the cell and dentate above the inner margin, followed by a series of black points; submarginal grey becoming white on the costa, bordered internally with brown; reniform and orbicular stigmata grey flecked with brown. Secondaries fuscous. Under surface of primaries fuscous on the disc, margin paler, medial line darker: secondaries whitish, suffused with fuscous on the costal and outer marginal areas; discal spot and two transverse lines beyond dark fuscous.

Expanse 28–34 millim.

I have specimens from Ta-chien-lu, Moupin, Omei-shan, and Ni-tou. Occurs in June and July.

*Habitat.* WESTERN CHINA.

## Genus ILATTIA.

Walker, Cat. Lep. Het., xvi, p. 208 (1858).

### 999. *Ilattia cephusalis.*

*Ilattia cephusalis*, Walk., Cat. Lep. Het., xvi, p. 209 (1858); Leech, Proc. Zool. Soc. Lond., 1889, p. 492.
*Miana inornata*, Walk., *op. cit.*, Suppl., ii, p. 677 (1865).
*Perigea leucospila*, Walk., *l. c.*, p. 683.
*Erastria stigmatula*, Snell., Tijds. v. Ent., xv, p. 55, pl. iv, fig. 16 (1872).
*Mesotrosta stigmatula*, Snell., *op. cit.*, xxiii, p. 55 (1880).
*Amyna stellata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 162 (1878); Ill. Typ. Lep. Het., ii, p. 26, pl. xxix, fig. 6 (1878).
*Ilattia stellata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 493.
*Amyna octo*, Hampson, Fauna Brit. Ind., Moths, ii, p. 251 (1894).
*Chytoryza cephusalis*, Staud., Rom. sur Lép., vi, p. 570 (1892).

I have examples of the *stellata* form from Yokohama, Hakone, Nagasaki, Gensan, and Ship-y-shan; specimens of

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the type form have been received by me only from Gensan.

*Distribution.* KIUSHIU; JAPAN; CENTRAL and WESTERN CHINA; COREA; AMURLAND; NORTH INDIA; JAVA; CEYLON; CELEBES; ANDAMANS; SOUTH-WEST INDIA.

### 1000. *Ilattia cupreipennis.*

*Ilattia cupreipennis*, Moore, Lep. Atk., p. 112 (1882).
*Amyna octo*, Hampson, Fauna Brit. Ind., Moths, ii, p. 251.

There was one example in Pryer's collection without locality, and I have seen a specimen from Chekiang in the National Collection at South Kensington.

*Distribution.* SIKHIM; EASTERN CHINA; JAPAN.

### 1001. *Ilattia apicalis.*

*Ilattia apicalis*, Moore, Lep. Atk., ii, p. 112 (1882).
*Amyna octo*, Hampson, Fauna Brit. Ind., Moths, ii, p. 251 (1894).

One example taken by a native collector at Gensan in August.

*Distribution.* SIKHIM; COREA.

### 1002. *Ilattia mandarina.*

*Segetia* (?) *mandarina*, Staud., Rom. sur Lép., vi, p. 482, pl. ix, fig. 4 (1892).

Staudinger describes this species from Amurland, but states that he has also received specimens from the north of Pekin.

*Distribution.* AMURLAND; NORTH CHINA.

## Genus PERIGEA.

Guenée, Noct., i, p. 225 (1852).

### 1003. *Perigea centralis.*

*Perigea centralis*, Walk., Cat. Lep. Het., xi, p. 734 (1857); Leech, Proc. Zool. Soc. Lond., 1889, p. 492.
*Perigea illecta*, Walk., *op. cit.*, xxxii, p. 684 (1865).
*Euplexia conducta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 211 (1894).

The female of this species, to which Walker gave the

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name *illecta*, was from Japan. I have no example of either *P. centralis* or of *illecta*.

*Distribution.* NORTH INDIA; CEYLON; ANDAMAN ISLANDS; JAPAN.

1004. *Perigea galaxia.*

*Perigea galaxia*, Butl., Proc. Zool. Soc. Lond., 1883, p. 159.
*Euplexia conducta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 211 (1894).

One example in Pryer's collection without locality.

*Distribution.* HIMALAYAS; JAPAN.

1005. *Perigea biguttata.*

*Mamestra biguttata*, Motsch., Bull. Soc. Nat. Mosc., xxxix, 1, p. 194 (1866).

I took specimens at Nagasaki in June, and at Fushiki and Tsuruga in July; my native collector obtained the species at Gensan in August. The species has also been recorded from Tokio.

*Distribution.* JAPAN; KIUSHIU; COREA.

1006. *Perigea* (?) *argyrosticta.*

*Perigea* (?) *argyrosticta*, Butl., Trans. Ent. Soc., 1881, p. 177.

Described from Tokio. I have not received any specimens of this species.

*Habitat.* JAPAN.

Genus SCEDOPLA.

Butler, Ann. and Mag. Nat. Hist., (5) i, p. 201 (1878).

1007. *Scedopla regalis.*

*Scedopla regalis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 201 (1878); Ill. Typ. Lep. Het., iii, p. 22, pl. xlvi, fig. 5 (1879).

Four specimens received from Mr. Manley of Yokohama.

*Habitat.* JAPAN.

Genus CARADRINA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 259 (1894).

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1008. *Caradrina exigua.*

*Noctua exigua*, Hübn., Noct., fig. 362.
*Laphygma exigua*, Guen., Noct., i, p. 158 (1852); Leech, Proc. Zool. Soc. Lond., 1889, p. 493.
*Caradrina exigua*, Hampson, Fauna Brit. Ind., Moths, ii, p. 259 (1894).

One specimen in Pryer's collection, and one received from Ichang, the latter taken in August.

Staudinger records the species from the north of Pekin.

*Distribution.* EUROPE.—SOUTH AFRICA.—NORTH and SOUTH AMERICA.—Throughout ASIA.

1009. *Caradrina kadenii.*

*Noctua kadenii*, Frey., Neu. Beit., ii, p. 147, pl. clxxxvi (1836).
*Caradrina kadenii*, Dup., Hist. Nat. Lép. Fr., Suppl., iii, p. 314, pl. xxix (1836); Hampson, Fauna Brit. Ind., Moths, ii, p. 260 (1894).
*Caradrina flavirena*, Guen., Noct., i, p. 250.
*Caradrina proxima*, Rambur., Lép. And., pl. xviii, fig. 7.

I have two specimens from Yokohama and one from Gensan. The species appears to be very common in Kulu, North-west Himalayas.

*Distribution.* EUROPE. — NORTH-WEST HIMALAYAS; UMBÁLLA; JAPAN; COREA.

1010. *Caradrina himaleyica.*

*Caradrina himaleyica*, Koll., Hügel's Kaschmir, iv, p. 479 (1844).

One example from Pu-tsu-fong, taken in June or July, agrees with specimens from the North-west Himalayas in my collection.

*Distribution.* NORTH-WEST HIMALAYAS; KASHMIR; WESTERN CHINA.

1011. *Caradrina chinensis*, sp. n.

Primaries pale brown with four black spots on the costa from which blackish, wavy lines traverse the wings; sub-basal line short, indistinct; antemedial line outwardly oblique, angled above the inner margin; postmedial line excurved above the cell, dentate

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thence to inner margin; submarginal line blackish, sinuous, diffuse; central shade dusky; reniform and orbicular stigmata dusky, outlined in paler, there are some white specks on the outline of the reniform and this stigma is sometimes tinged with reddish; venation on outer area fuscous. Secondaries pale fuscous with blackish discal dot and whitish fringes. Under surface of primaries fuscous with a pale streak along the costa interrupted by the blackish postmedial line, a blackish discal mark: secondaries whitish powdered with fuscous on costal area; discal dot and postmedial line blackish.

Expanse 36–39 millim.

A number of specimens from Pu-tsu-fong, one example from Ta-chien-lu, and one from Ni-tou. June and July.

*Habitat.* WESTERN CHINA.

Allied to *C. himaleyica*, Koll., but separable from that species by the rather larger reniform stigma and by the absence of red or brown colour on submarginal line.

### 1012. *Caradrina morpheus.*

*Noctua morpheus*, Hufn., Berl. Mag., iii, p. 302.
*Caradrina morpheus*, Treit., Schmett., v, 2, p. 249.

I obtained a specimen at Gensan in June.

*Distribution.* EUROPE.—AMURLAND; COREA.

### 1013. *Caradrina lenta.*

*Caradrina lenta*, Treit., Schmett., v, 2, p. 257.
*Caradrina lenta*, var. *lentina*, Staud., Stett. Ent. Zeit., 1888, p. 255; Rom. sur Lép., vi, p. 487 (1892).

A series in Pryer's collection, the specimens chiefly from Oiwake. Staudinger records specimens from the north of Pekin.

*Distribution.* EUROPE.—AMURLAND; JAPAN; NORTH CHINA.

### 1014. *Caradrina fusca*, sp. n.

Primaries fuscous-brown, with indistinct transverse lines; subbasal line black, edged with pale brown; antemedial line black, angled towards inner margin, edged inwardly with pale brown; postmedial line pale brown with some blackish points on its inner edge; reniform stigma not clearly defined, some white specks at its upper and lower ends; central shade blackish, curving round the inner edge of reniform; fringes preceded by a pale line. Secondaries pale fuscous with blackish discal dot and pale fringes, the latter preceded by a

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pale line and traversed by a fuscous line. Under surface of primaries fuscous and of secondaries whitish with the costal area fuscous.

Expanse 36 millim.

One female example from Ta-chien-lu, taken in May or June.

*Habitat.* WESTERN CHINA.

1015. *Caradrina* (?) *grisescens.*

*Caradrina* (?) *grisescens*, Pouj., Ann. Soc. Ent. France, 1887, p. clvii.

Described from Moupin; I have not received any example of this species.

*Habitat.* WESTERN CHINA.

1016. *Caradrina thwaitesi.*

*Methorasa thwaitesii*, Moore, Lep. Ceyl., iii, p. 61, pl. 151, fig. 2 (1884).

*Caradrina thwaitesi*, Hampson, Fauna Brit. Ind., Moths, ii, p. 262 (1894).

One example without exact locality in Pryer's collection, and one from Ichang; the latter was taken in August.

*Distribution.* GANJAM; CEYLON (*Hampson*); JAPAN; CENTRAL CHINA.

1017. *Caradrina palpalis.*

*Radinacra palpalis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 161 (1878); Ill. Typ. Lep. Het., ii, p. 26, pl. xxix, fig. 7 (1878).

*Dadica lineosa*, Moore, Proc. Zool. Soc. Lond., 1881, p. 349; Hampson, Fauna Brit. Ind., Moths, ii, p. 265 (1894).

*Caradrina albosignata*, Oberth., Etud. d'Entom., v, p. 73, pl. iv, fig. 1 (1880).

*Caradrina albosignata*, var. *cæca*, Oberth., *l. c.*

*Dadica palpalis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 493.

I have specimens from Satsuma, Nagahama, Gensan, Chang-yang, Omei-shan, and Chia-kou-ho. Occurs in May, June, and July.

The species appears to be a very variable one; my series from Japan and Corea embraces examples agreeing with all the named forms.

*Distribution.* AMURLAND; JAPAN; CENTRAL and WESTERN CHINA; COREA; NORTH-WEST INDIA.

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### 1018. *Caradrina squalida.*

*Glottula squalida*, Leech, Proc. Zool. Soc. Lond, 1889, p. 490, pl. lii, fig. 3.

The only examples of this species that I have seen are from Oiwake, and were in Pryer's collection.

*Habitat.* JAPAN.

### 1019. *Caradrina fuliginosa*, sp. n.

Primaries blackish dusted with greyish, the costa dotted with whitish towards apex; antemedial line black, outwardly angled below the middle; postmedial line represented by a series of black points; submarginal line greyish, wavy; all these markings are very indistinct; reniform has some greyish scales on its outline and centre but it is not clearly defined, and the orbicular seems to be absent; fringes minutely marked with greyish. Secondaries fuscous, fringes paler at their base. Under surface fuscous, all the wings have a darker postmedial line.

Expanse 34 millim.

One female specimen, taken by myself at Nagasaki in June.

*Habitat.* KIUSHIU.

### 1020. *Caradrina radiata*, sp. n.

Primaries pale purplish-brown clouded with darker; transverse lines blackish, but not well defined; the postmedial is serrated from costa to vein 2 and angled on vein 1, the antemedial is nearly straight, but angled before the inner margin, where it is inclined inwards; reniform and orbicular stigmata pale, outlined in blackish and centred with dusky, there is a blackish transverse shade below the reniform, and a pale ray from the orbicular stigma which passes through the reniform and extends almost to the outer margin. Secondaries fuscous, with a blackish discal mark; fringes paler, preceded by a blackish line. Under surface fuscous, the secondaries are whitish on the abdominal area, and have a black discal dot and indications of a blackish central line.

Expanse 38 millim.

Two male specimens and one female from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

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### 1021. *Caradrina* (?) *secunda*, sp. n.

Primaries pale reddish-grey with a broad darker grey central fascia; the inner edge of the latter is formed by the double, brownish, antemedial line, which is wavy and almost erect; the outer edge is bounded by a rather broad brown line, which is excurved beyond the cell and dentate towards the inner margin; a brown lunule at end of the cell; postmedial line partly double, brownish, curved and recurved, preceded by two short longitudinal white streaks above the middle, the double portions enclosing whitish; submarginal line whitish, wavy, outwardly edged with brown. Secondaries pale stramineous, with a blackish discal dot and indistinct postmedial line; anal angle yellow with a black mark upon it. Under surface whitish, primaries suffused with fuscous; all the wings have a dark discal spot and indications of a postmedial line.

Expanse 34 millim.

Two males from Ta-chien-lu, taken in July and August, one male from Ichang and one female from Chang-yang, both taken in June.

The Ichang male specimen has the secondaries yellowish-buff, and the postmedial line of primaries is not double; the under surface is yellowish with deep yellow on the costa of each wing. I propose the name *flava* for this form.

*Habitat.* CENTRAL and WESTERN CHINA.

### 1022. *Caradrina* (?) *picta.*

*Caradrina picta*, Swinh. M.S.; Hampson, Fauna Brit. Ind., Moths, ii, p. 263 (1894).

Two male specimens and one female from Chang-yang, taken in July and August.

*Distribution.* SIKHIM; KHÁSIS; EASTERN and CENTRAL CHINA.

## Genus PROSPALTA.

Walker, Cat. Lep. Het., xiii, p. 1114 (1857).

### 1023. *Prospalta siderea*, sp. n.

Head and thorax dark cupreous-brown flecked with white, and with two white spots on the tegulæ; second and third joints of the palpi tipped with white.

Primaries dark cupreous-brown with numerous white dots forming

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clusters on the basal area and around the orbicular and reniform stigmata; the latter has a white inner edge; the ante- and postmedial lines are also formed of white dots, but the latter only is well defined, the antemedial line is followed below the middle by a white spot, and there are some white dots on the costa between the lines; three series of white dots on the outer marginal area; fringes marked with white. Secondaries dark fuscous with a blackish discal mark; fringes spotted and tipped with white, preceded by a blackish line, which is edged with white towards anal angle. Under surface cinereous suffused with fuscous; all the wings have a blackish discal mark and transverse line; the latter is edged with whitish on the costa of primaries.

Expanse 38–40 millim.

A series of seventeen specimens from Wa-shan, Omei-shan, Ni-tou, and Chia-kou-ho. Occurs in June and July.

*Habitat.* WESTERN CHINA.

Allied to *P. stellata*, Moore, from India.

### 1024. *Prospalta contigua*, sp. n.

Similar to *P. siderea*, but the orbicular has a central fuscous speck, and is not surrounded with white dots; the prothorax is not spotted with white.

Expanse 38–46 millim.

This species, of which I have eighteen specimens, occurs in June and July in most of the Western Chinese localities visited by my collectors. It appears to be allied to *P. leucospila*, Walk., from India.

*Habitat.* WESTERN CHINA.

### 1025. *Prospalta parva*, sp. n.

Primaries brown; abbreviated sub-basal line yellowish-white followed by a white dot in the cell; antemedial line represented by a white spot on the costa and yellowish-white curves and a dot towards inner margin; postmedial line yellowish-white, curved, and interrupted, followed by some white specks; submarginal line represented by white dots and specks; reniform stigma surrounded by six white dots, orbicular indicated by three whitish specks; fringes marked with whitish and preceded by some whitish specks. Secondaries whitish suffused with fuscous on basal and outer marginal areas, discal mark and transverse line dusky. Under surface whitish: primaries tinged with fuscous, discal mark and two

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transverse lines dusky: secondaries powdered with brown scales on costal area, discal spot and wavy transverse line blackish.

Head and thorax brown; abdomen rather paler.

Expanse 28 millim.

Two male specimens and five females, taken in August at Chang-yang.

*Habitat.* CENTRAL CHINA.

## Genus LEUCANIA.

Ochsenheimer, Eur. Schmett., iv, p. 81 (1816).

### 1026. *Leucania flavostigma.*

*Xanthia flavostigma*, Brem., Lep. Ost.-Sib., p. 52, pl. v, fig. 11 (1864).

*Leucania singularis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 80 (1878); Ill. Typ. Lep. Het., ii, p. 22, pl. xxviii, fig. 11 (1878).

*Aletia formosana*, Butl., Proc. Zool. Soc. Lond., 1880, p. 675.

The specimens in Pryer's collection were from Yokohama and Gifu. I obtained one example at Gensan in June, and have received a specimen from Kiukiang.

I quite agree with the arrangement in our National Collection where this species is referred to *flavostigma*, Brem., and *singularis*, Butl., is placed with it as a synonym. I am also inclined to consider *formosana*, Butl., as a form of this variable species of which I have a long series. Further I concur with Staudinger that my *inornata* is a distinct species (Rom. sur Lép., vi, p. 479).

*Distribution.* AMURLAND; COREA; FORMOSA; JAPAN; CENTRAL CHINA.

### 1027. *Leucania inornata.*

*Leucania flavostigma*, var. *inornata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 482, pl. l, fig. 7.

There were two examples in Pryer's collection, one from Gifu and the other probably from Yokohama, as I have received one specimen from Mr. Manley which was obtained in the latter district.

Apart from the absence of markings the pink fringes would seem to indicate *inornata* as distinct from *flavostigma*.

*Habitat.* JAPAN.

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### 1028. *Leucania proxima*, sp. n.

Closely allied to *L. l-album*, Linn., but differs from that species in being darker and in having black, wavy and angulated antemedial and postmedial lines; the longitudinal black streaks from the base are broader, and there are some blackish clouds beyond the antemedial lines; the L mark is represented by an acute-angled V-shaped mark, and there is a white dot above it on the subcostal nervure. Secondaries fuscous with a dusky discal mark; on the under surface the transverse series of blackish streaks on nervures are more distinct than in *L. l-album*.

Expanse 36 millim.

One female specimen from Ni-tou, taken in July or August.

*Habitat.* WESTERN CHINA.

### 1029. *Leucania nepos*, sp. n.

Primaries greyish-brown without transverse bands; reniform stigma represented by a white speck. Secondaries pale greyish-brown suffused with fuscous, especially on the outer margin, with a dark discal spot; fringes whitish. Under surface silvery-white, a conspicuous black spot on the costa of primaries towards the apex; discal spot of secondaries black, followed by a blackish line; fringes pale preceded by a series of black specks.

Expanse 40 millim.

One male specimen from Omei-shan, and one from Sultanpore.

*Distribution.* WESTERN CHINA; KULU.

This species, which resembles *Mythimna rufipennis*, Butl., belongs to Hampson's section A of the genus, in which the males have paired tufts of black hairs on the basal segment of abdomen below. The Kulu example has traces of transverse lines.

### 1030. *Leucania radiata*.

*Leucania radiata*, Brem., Lep. Ost.-Sib., p. 48, pl. v, fig. 8 (1864); Oberth., Etud. d'Entom., v, p. 70, pl. iii, fig. 5 (1880).

*Leucania abdominalis*, Moore, Proc. Zool. Soc. Lond., 1881, p. 338; Hampson, Fauna Brit. Ind., Moths, ii, p. 273 (1894).

Two specimens from Yokohama and two from Oiwake

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in Pryer's collection. There is little doubt as to the synonymy of this species.

*Distribution.* DHARMSÁLA; KHANDÁLA; BENGAL (*Hampson*); JAPAN; AMURLAND.

1031. *Leucania salebrosa.*

*Leucania salebrosa*, Butl., Ann. and Mag. Nat. Hist., (5) i, p 80 (1878); Ill. Typ. Lep. Het., ii, p. 22, pl. xxviii, fig. 10 (1878).
*Leucania rufistrigosa*, Moore, Proc. Zool. Soc. Lond., 1881, p. 337.
*Leucania decisissima*, Leech, Proc. Zool. Soc., 1889, p. 482.

There were two specimens from Yokohama in Pryer's collection; I have also received four examples from Kiukiang, and one from Ta-chien-lu. Occurs in July and August.

*Distribution.* DHARMSÁLA; UMBALLA; SIKHIM (*Hampson*); CENTRAL and WESTERN CHINA; JAPAN.

1032. *Leucania sinuosa.*

*Leucania sinuosa*, Moore, Lep. Atk., p. 102 (1882); Hampson, Fauna Brit. Ind., Moths, ii, p. 273 (1894).

One male specimen from Wa-shan, taken in July.

*Distribution.* HIMALAYAS; WESTERN CHINA.

1033. *Leucania zeæ.*

*Leucania zeæ*, Dup., Hist. Nat. Lép. Fr., vii, 1, p. 363, pl. cxxii, fig. 4.

I took a specimen at Nemoro in August, and my native collector obtained one at Hakodate in June or July. Both appear to be referable to this species, but I am not quite certain, as the secondaries are tinged with fuscous.

*Distribution.* EUROPE.—YESSO.

1034. *Leucania impura.*

*Noctua impura*, Hübn., Noct., fig. 396.
*Leucania impura*, Treit., Schmett., v, 2, p. 294.
*Leucania impura*, var. *amurensis*, Staud., Rom sur Lép., vi, p. 475 (1892).

One specimen from Oiwake in Pryer's collection; this

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is typical in colour, and not dark reddish-brown, which is the differential character of var. *amurensis*, Staud.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

1035. *Leucania innocens.*

*Nonagria innocens*, Butl., Trans. Ent. Soc. Lond., 1881, p. 173.

*Leucania innocens*, Leech, Proc. Zool. Soc. Lond., 1889, p. 483.

There were specimens from Yokohama in Pryer's collection. I took one example at Ningpo in April, and have received one from Ichang and one from Chia-kou-ho; both the latter were captured in August.

*Distribution.* JAPAN; EASTERN, WESTERN, and CENTRAL CHINA.

1036. *Leucania conigera.*

*Noctua conigera*, Fabr., Mant. Ins., ii, p. 177; Hübn., Noct., fig. 222.

*Leucania conigera*, Leech, Proc. Zool. Soc. Lond., 1889, p. 483.

The specimens in Pryer's collection were from Yokohama. I took one at Nemoro in August.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO.

1037. *Leucania loreyi.*

*Leucania loreyi*, Dup., Hist. Nat. Lép. Fr., iv, p. 81, pl. cv, fig. 7 (1827); Hampson, Fauna Brit. Ind., Moths, ii, p. 274 (1894).

There were nine specimens from Yokohama in Pryer's collection, and my collector took one example in the island of Kiushiu.

*Distribution.* EUROPE.—Throughout INDIA, BURMA, and CEYLON; JAPAN; KIUSHIU.

1038. *Leucania unipuncta.*

*Leucania unipuncta*, Haw., Lep. Brit., p. 174 (1803); Hampson, Fauna Brit. Ind., Moths, ii, p. 275 (1894).

*Leucania separata*, Walk., Cat. Lep. Het., Suppl., ii, p. 626 (1865).

*Leucania extranea*, Guen.; Leech, Proc. Zool. Soc. Lond., 1889, p. 482.

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I have specimens from Ta-chien-lu, Wa-shan, Chia-ting-fu, Chia-kou-ho, Kiukiang, and Chang-yang. Those in Pryer's collection were from Yokohama.

*Distribution.* UNIVERSAL.

### 1039. *Leucania striata*, sp. n.

Allied to *L. unipuncta*, Haw., but differs from that species in being finely striated with brownish; the postmedial line is angulated near the costa, less regularly curved beyond the cell, and the black dots comprising it are more distinct; the reniform stigma is represented by a white dot, and the orbicular is entirely absent; there is a black dot just below the cell, and some dusky marks between it and the inner margin; there is no oblique streak from the apex, but there are some dusky clouds on the outer margin below the apex. Secondaries more pearly than in *L. unipuncta*. Prothorax transversly lined with darker, and the patagia are tipped with black.

Expanse 40–46 millim.

There were sixteen specimens, including both sexes, in Pryer's collection; these were from the Yokohama district, and the Loochoo islands.

*Distribution.* JAPAN; LOOCHOO.

### 1040. *Leucania pallidicosta.*

*Aletia albicosta*, Moore, Lep. Atk., p. 97 (1882).
*Leucania pallidicosta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 276 (1894).

I have examples of this very distinct species from Chia-kou-ho, and Ta-chien-lu. These agree in all respects with specimens from Kulu in my collection.

This species differs from the red forms of *L. unipuncta*, Haw., in having the neuration of primaries marked with white.

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM; CEYLON (*Hampson*); KULU; WESTERN CHINA.

### 1041. *Leucania albicosta.*

*Leucania albicosta*, Moore, Proc. Zool. Soc. Lond., 1881, p. 338, pl. xxxvii, fig. 10.
*Leucania nigrilineosa*, Moore, Lep. Atk., ii, p. 103 (1882).
*Leucania albicosta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 279 (1894).

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One example of the *nigrilineosa* form from Wa-shan, taken in July.

*Distribution.* DHARMSÁLA; SIKHIM; KHÁSIS; NÁGAS; NILGIRIS; BERNARDMYO (*Hampson*); WESTERN CHINA.

### 1042. *Leucania ferrilinea*, sp. n.

Primaries pale brown, medial nervure paler and edged with reddish in the cell; stigmata paler, separated by a greyish cloud; postmedial line indicated by black dots towards the inner margin, and some wavy marks towards the costa; apical streak dusky. Secondaries fuscous, fringes pinkish. Under surface of primaries fuscous, pinkish on the costa; fringes pinkish: secondaries greyish tinged with pinkish on costal area; a blackish discal mark and a dusky, wavy transverse line.

Expanse 34 millim.

Two male specimens and three females from Pu-tsu-fong, one male from Omei-shan, and one from Moupin.

*Habitat.* WESTERN CHINA.

### 1043. *Leucania pryeri*, sp. n.

Agrees almost exactly on the upper surface with some greyish specimens of *L. albicosta*, Moore (= *prominens*, Moore), but there is a conspicuous black streak from the base below the median nervure, which is edged above with black, and terminates in a white dot. The secondaries are more suffused with fuscous towards the outer margin. The under surface of both wings is bright silvery without markings, which at once separates this species from *L. albicosta*.

Expanse 38 millim.

One male specimen in Pryer's collection without locality label.

*Habitat.* JAPAN.

### 1044. *Leucania simplex*.

*Leucania simplex*, Leech, Trans. Ent. Soc. Lond., 1889, p. 130.

The type was from Kiukiang; I have also one example from Ship-y-shan, and one from Chang-yang.

*Habitat.* CENTRAL CHINA.

### 1045. *Leucania nigrilinea*.

*Leucania nigrilinea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 482, pl. l, fig. 8.

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Occurs at Yokohama and in the island of Kiushiu, and the Loochoo islands. I have nine specimens, the majority of which are from Pryer's collection.

*Distribution.* JAPAN; KIUSHIU; LOOCHOO.

## Genus MYTHIMNA.

Hübner, Verz. Schmett., p. 238.

### 1046. *Mythimna turca.*

*Noctua turca*, Linn., Syst. Nat., xii, p. 847; Hübn., Noct., fig. 218.

*Mythimna limbata*, Butl., Trans. Ent. Soc. Lond., 1881, p. 173.

*Leucania turca*, Staud., Rom. sur Lép., vi, p. 479 (1892).

I have specimens from Yokohama, Oiwake, Kiushiu, Hakodate, Gensan, Chang-yang, Kiukiang, Omei-shan, and the province of Kwei-chow. Occurs in June and July.

The colour of the primaries ranges from chestnut-brown through ochreous-brown to ochreous-grey; the transverse lines are usually clearly defined, but in some examples they are only faintly traceable, and in one example from Gensan, which has the median nervure and branches whitish, the lines are entirely obliterated.

*Distribution.* EUROPE.—AMURLAND; JAPAN; KIUSHIU; YESSO; COREA; CENTRAL and WESTERN CHINA.

### 1047. *Mythimna grandis.*

*Mythimna grandis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 79 (1878); Ill. Typ. Lep. Het., ii, p. 22, pl. xxviii, fig. 7 (1878); Leech, Proc. Zool. Soc. Lond., 1889, p. 480.

*Mythimna divergens*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 79 (1878); Ill. Typ. Lep. Het., ii, p. 22, pl. xxviii, fig. 8 (1878).

Described from Hakodate. There were specimens from Oiwake and Yokohama in Pryer's collection, and I took examples at Gensan in July.

My series is a very variable one, some examples agree with typical *grandis*, others with *divergens*, others again agree with *grandis* in one character and *divergens* in another. In some specimens the antemedial line is not



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well defined, and in others it is quite absent; the postmedial line may or may not be denticulate, whilst in three examples it is only faintly indicated, and in two others it is entirely eliminated. The secondaries are subject to modification both as regards colour and markings.

I have a series of fourteen specimens from China and one from Corea, which I believe are referable to *M. grandis;* but as all these examples exhibit constant differential characters from the type of the species and also from var. *divergens,* I venture to describe the form as—

var. *curvata,* nov.

Primaries greyish-brown, reddish-brown in one example; venation paler; antemedial line curved, postmedial nearly straight from costa, but slightly curved inwards before reaching the inner margin; the space between the lines sometimes suffused with darker. Secondaries more uniformly fuscous than in the type of *grandis* or var. *divergens.*

In var. *curvata* neither of the transverse lines are waved or denticulate; the regularly-curved antemedial line is a prominent character.

Occurs in June and July at Chang-yang, Chia-kou-ho, Wa-shan, and Gensan.

*Distribution.* JAPAN; YESSO; COREA; CENTRAL and WESTERN CHINA.

### 1048. *Mythimna rufipennis.*

*Mythimna rufipennis,* Butl., Ann. and Mag. Nat. Hist., (5) i, p. 79 (1878); Ill. Typ. Lep. Het., ii, p. 21, pl. xxviii, fig. 6 (1878).

*Leucania semicircula,* Graeser, Berl. Ent. Zeit., 1888, p. 349.

A fine series from Oiwake in Pryer's collection; I took a specimen in July at Gensan, and I have received the species from Mr. Manley of Yokohama. An example from Amurland in my collection agrees well with the Japanese specimens.

Oberthür's figure of "*Leucania*" *inanis* (Etud. d'Entom., v, p. 70, pl. iii, fig. 4) does not agree with his description of that insect, as it is without the white markings referred to in the text. The figure, however, seems to represent a worn example of *M. rufipennis,* and this species frequently has a pale mark at end of the cell.

*Distribution.* JAPAN; AMURLAND.

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### 1049. *Mythimna placida.*

*Mythimna placida*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 79 (1878); Ill. Typ. Lep. Het., ii, p. 21, pl. xxviii, fig. 5 (1878).

There were specimens from Yokohama in Pryer's collection. My native collector took examples at Ningpo in July, and at Gensan in August. I have also received the species from Chang-yang, Omei-shan, Ta-chien-lu, and Ni-tou.

Varies somewhat in coloration and in the intensity of the dark markings on primaries.

*Distribution.* JAPAN; CENTRAL, EASTERN, and WESTERN CHINA; COREA.

## Genus ARCILASISA.

Walk.; Hampson, Fauna Brit. Ind., Moths, ii, p. 282 (1894).

### 1050. *Arcilasisa plagiata.*

*Agrotis plagiata*, Walk., Cat. Lep. Het., xi, p. 740 (1857).
*Tiracola plagiata*, Moore, Proc. Zool. Soc. Lond., 1881, p. 352; Lep. Ceyl., iii, p. 34, pl. xxxiv, figs. 1, 1a (1884).
*Arcilasisa plagiata*, Hampson, Fauna Brit. Ind., Moths, ii, p. 282 (1894).

Two specimens from Moupin, taken in June.

*Distribution.* SIKHIM; SOUTH INDIA; CEYLON; BORNEO; JAVA (*Hampson*); WESTERN CHINA.

## Genus AUCHMIS.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 283 (1894).

### 1051. *Auchmis polyodon.*

*Phalæna polyodon*, Clerck., Icon., pl. ii, fig. 3 (1759).
*Noctua perspicillaris*, Linn., Faun. Suec., p. 317 (1761); Hübn., Noct., pl. li, fig. 249.
*Cloantha perspicillaris*, Guen., Noct., ii, p. 113 (1852).

I obtained two specimens at Hakodate in August.

*Distribution.* EUROPE.—AMURLAND; YESSO.

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1052. *Auchmis intermedia.*

*Cloantha intermedia*, Brem., Lep. Ost.-Sib., p. 53, pl. v, fig. 13 (1864).
*Auchmis sikkimesis*, Moore, Proc. Zool. Soc. Lond., 1867, p. 49, pl. vi, fig. 15.
*Auchmis intermedia*, Hampson, Fauna Brit. Ind., Moths, ii, p. 283 (1894).

There were specimens from Yokohama in Pryer's collection. I obtained the species in Satsuma in May and at Tsuruga, Fushiki, and Gensan in July. My native collector took some examples at Ningpo in June, and in the island of Kiushiu in July; I have also received specimens from Chang-yang, Kiukiang, Ta-chien-lu, Ni-tou, Wa-shan, and Chia-kou-ho, all taken in July.

*Distribution.* Throughout INDIA and CEYLON (*Hampson*); AMURLAND; COREA; EASTERN, WESTERN, and CENTRAL CHINA; JAPAN; KIUSHIU.

Genus NONAGRIA.

Ochsenheimer, Eur. Schmett., p. 82 (1816).

1053. *Nonagria turpis.*

*Nonagria turpis*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 359 (1879).

I obtained this species at Nagasaki in May, and there was a long series in Pryer's collection from Yokohama.

*Habitat.* JAPAN and KIUSHIU.

1054. *Nonagria sparganii.*

*Noctua sparganii*, Esp., Schmett., pl. cxlviii, figs. 2, 3.
*Nonagria sparganii*, Treit., Schmett. Eur., ii, p. 323; Leech, Proc. Zool. Soc. Lond., 1889, p. 484.
*Nonagria sparganii*, var. *strigosa*, Staud., Rom. sur Lép., vi, p. 468 (1892).

There was one example without locality in Pryer's collection. This is a small dark form, and agrees very well with a French specimen in my collection.

Dr. Staudinger (*l. c.*), referring to my former paper, suggests that the Japanese example that I there referred to this species may be a specimen of "*Mythimna*" *placida*,

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an insect, I may remark, of a totally different appearance, and of which I have an extensive series.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

1055. *Nonagria ærata.*

*Leucania ærata*, Butl., Ann. and Mag. Nat. Hist, (5) i, p. 80 (1878); Ill. Typ. Lep. Het., iii, p. 13, pl. xliv, fig. 4 (1879).

Described from Hakodate; possibly a form of *N. sparganii.*

*Habitat.* YESSO.

Genus HYDRŒCIA.

Guenée, Noct., i, p. 125 (1852).

1056. *Hydrœcia petasitis.*

*Hydrœcia petasitis*, Doubl. Zool., v, p. 1915 (1847); Leech, Proc. Zool. Soc. Lond., 1889, p. 484.

*Hydrœcia petasitis*, (?) var. *amurensis*, Staud., Rom. sur Lép., vi, p. 465 (1892).

The only example in Pryer's collection was from Yesso; I obtained specimens at Hakodate and two in Nemoro in August. These are all undoubtedly referable to *petasitis.* Dr. Staudinger received examples from Amurland, and as he is unable to decide whether they are referable to this species or to *H. micacea*, he solves the difficulty by increasing synonymy, in his usual manner, by describing the form as var. *amurensis.*

Butler (Trans. Ent. Soc. Lond., 1890, p. 679) refers Japanese specimens of what I believe to be *H. petasitis*, to "*Gortyna*" *micacea*, Esp.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO.

Genus LEOCYMA.

Guen.; Hampson, Fauna Brit. Ind., Moths, ii, p. 288 (1894).

1057. *Leocyma albonitens.*

*Acontia albonitens*, Brem., Bull. Acad. Sci. Petr., iii, p. 581 (1861).

*Leocyma albonitens*, Brem., Lep. Ost.-Sib., p. 55, pl. v, fig. 15 (1864).

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Specimens from Oiwake and Yesso in Pryer's collection; I obtained the species at Gensan in July, and at Hakodate in August.

*Distribution.* AMURLAND; JAPAN; YESSO; COREA.

1058. *Leocyma atrata.*

*Chasmina atrata*, Butl., Ann. and Mag. Nat. Hist., (5) xiii, p. 274 (1884).
*Leocyma atrata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 522.
*Leocyma borussica*, Staud., Stett. Ent. Zeit., 1888, p. 264; Rom. sur Lép., vi, p. 557, pl. x, fig. 11 (1892).

A fine series from Yesso in Pryer's collection.

Staudinger's figure (*l. c.*) exactly represents *atrata*, Butl.

*Distribution.* YESSO; AMURLAND.

1059. *Leocyma nigrilinea.*

*Leocyma nigrilinea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 522, pl. li, fig. 8.

The type of this species was taken at Kioto, and was in Pryer's collection.

The species described by Staudinger as *Leocyma nigrilinea* from Amurland (Rom. sur Lép., vi, p. 557, pl. x, fig. 10) is quite distinct from my *nigrilinea*.

*Habitat.* JAPAN.

1060. *Leocyma nervosa.*

*Leocyma nervosa*, Butl., Trans. Ent. Soc. Lond., 1881, p. 187.

Described from Tokio. I have specimens from Yokohama, Nagahama, and Hakodate. Occurs in July.

*Habitat.* JAPAN and YESSO.

Genus SPHRAGIFERA.

Staudinger, Rom. sur Lép., vi, p. 554 (1892).

1061. *Sphragifera sigillata.*

*Anthœcia* (?) *sigillata*, Mén., Bull. de l'Acad., xvii, p. 219; Schr., Reis. Amur., p. 60, pl. v, fig. 3 (1859).
*Sphragifera sigillata*, Staud., Rom. sur Lép., vi, p. 554 (1892).

The specimens in Pryer's collection were from Oiwake;

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my native collector took the species at Hakodate in July, and I obtained some examples at the same locality in August.

*Distribution.* AMURLAND; JAPAN; YESSO.

1062. *Sphragifera biplaga.*

*Acontia biplaga*, Walk., Cat. Lep. Het., xii, p. 795 (1857).
*Acontia biplagiata*, Walk., *op. cit.*, Suppl., iii, p. 781 (1865); Butl., Ill. Typ. Lep. Het., iii, p. 19, pl. xiv, fig. 7 (1879).
*Leocyma biplaga*, Hampson, Fauna Brit. Ind., Moths, ii, p. 289 (1894).

I obtained this species at Fusan in June, and at Tsuruga and Shimoneseki in July; my native collector captured examples at Ningpo in June, and at Gensan and Nikko in July. I have also received specimens from Chang-yang, May and July, and from the province of Kwei-chow, June or July.

*Distribution.* SIKHIM; NILGIRIS (*Hampson*); EASTERN, CENTRAL, and WESTERN CHINA; COREA; JAPAN.

Subfamily *ACONTIINÆ.*

Genus DIPHTHERA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 293 (1894).

1063. *Diphthera malachites.*

*Telesilla malachites*, Oberth., Etud. d'Entom., v, p. 80, pl. iii, fig. 9 (1880).
*Canna splendens*, Moore, Proc. Zool. Soc. Lond., 1888, p. 412; Butl., Ill. Typ. Lep. Het., vii, p. 59, pl. 128, fig. 4 (1889).
*Diphthera malachitis*, Hampson, Fauna Brit. Ind., Moths, ii, p. 294 (1894).

One example from Moupin, taken in June. This agrees with specimens from Amurland and Kulu in my collection.

*Distribution.* DHARMSÁLA; SIKHIM (*Hampson*); AMURLAND; WESTERN CHINA; KULU.

1064. *Diphthera orion.*

*Noctua orion*, Esp., Schmett., iv, pl. cviii, figs. 4–7.
*Moma orion*, Leech, Proc. Zool. Soc. Lond., 1889, p. 479.
*Diphthera orion*, Hampson, Fauna Brit. Ind., Moths, ii, p. 293 (1894).

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*Moma orion*, var. (ab.) *murrhina*, Graes.; Staud., Rom. sur Lép., vi, p. 400 (1892).

I have specimens from Oiwake, Yokohama, Gensan, Kiukiang, Chang-yang, and Omei-shan. These do not differ in any important character from European examples.

*Distribution.* EUROPE.—AMURLAND; NORTHERN, CENTRAL, and WESTERN CHINA; COREA.

1065. *Diphthera vigens.*

*Diphthera vigens*, Walk., Cat. Lep. Het., xxxii, p. 616 (1865).
*Diphthera vigens*, Hampson, Fauna Brit. Ind., Moths, ii, p. 294 (1894).

Six examples from Pu-tsu-fong, taken in June and July.

*Distribution.* NÁGAS; SIKHIM; KULU (*Hampson*); WESTERN CHINA.

1066. *Diphthera pallida.*

*Diphthera pallida*, Walk., Cat. Lep. Het., xxxv, p. 1953 (1866); Moore, Proc. Zool. Soc. Lond., 1867, p. 46, pl. vi, fig. 6.
*Diphthera fasciata*, Moore, P. Z. S., 1888, p. 408; Butl., Ill. Typ. Lep. Het., vii, pl. cxxii, fig. 1 (1889).
*Diphthera pallida*, Hampson, Fauna Brit. Ind., Moths, ii, p. 295 (1894).

Nine specimens from Pu-tsu-fong, and one from Omei-shan, taken in June and July.

*Distribution.* DHARMSÁLA; SIKHIM (*Hampson*); KASHMIR; WESTERN CHINA.

1067. *Diphthera viridis.*

*Agriopis viridis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 502, pl. 11, fig. 6.

Four specimens in Pryer's collection, and one received from Mr. Manley of Yokohama.

*Habitat.* JAPAN.

1068. *Diphthera marmorea*, sp. n.

Head and thorax bright green; palpi black on sides; abdomen pale brown. Primaries bright green, spotted with black on the costa; basal line black, expanding into a patch below median nervure; the lower portion of this patch is brownish, outwardly edged with

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black, the upper portion is projected in the direction of a black spot on the costa; reniform and orbicular stigmata indistinct; there is a black outlined brownish spot between the stigmata, a larger one following the reniform, and a less conspicuous one before the orbicular; postmedial band black variegated with brownish, dentate, and inwardly edged by a whitish line; there is a marginal series of black dots and the fringes are spotted with black. Secondaries whitish with indistinct dusky discal mark, central line and submarginal band. Under surface of primaries yellowish-white suffused with fuscous on basal three-fourths and tinged with green on outer margin; discal spot with smaller spot above it on costa, and wavy postmedial line, blackish: secondaries yellowish-white with a slight green tinge, powdered with fuscous scales on costal area; discal spot and wavy transverse line blackish.

Expanse 40–42 millim.

One male specimen and two females from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

Allied to *D. discibrunnea*, Moore, from Sikhim.

### 1069. *Diphthera vivida*, sp. n.

Head and thorax green; antennæ pale brown, pectinated in male, serrated in female, abdomen ochreous-white with slight ochreous tufts in the male. Primaries vivid green, spotted with black on the costa; sub-basal line represented by two black dots; antemedial line black edged outwardly with whitish, sinuous, uniting with an oblique black bar on the inner margin; postmedial line black edged inwardly with whitish, sinuous and dentate, commencing in a triangle on the costa; stigmata partly outlined in black and whitish; a small black spot at the base of the wing, one at angle of the cell, a short curved line below median nervure, and a square black spot between the reniform and the orbicular stigmata; fringes marked with black and preceded by a series of black dots. Secondaries whitish with dusky discal spot and transverse line. Under surface whitish tinged with green on the primaries and the costal area of secondaries; all the wings have a black discal spot connected with a black spot on the costa; the postmedial line is indicated by black dots, and there are other black dots on the costa of primaries.

Expanse 34–38 millim.

Eight specimens, including both sexes, from Ni-tou, Omei-shan, and Pu-tsu-fong. June and July.

*Habitat.* WESTERN CHINA.

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## Genus BRYOPHILA.

Treitschke, Eur. Schmett., v, 1, p. 57 (1825).

### 1070. *Bryophila algæ.*

*Noctua algæ*, Fabr., Syst. Ent., p. 614.
*Microphysa stictica*, Mén., Bull. Mus. Petr., xvii, p, 315 (1859).
*Bryophila algæ*, Leech, Proc. Zool. Soc. Lond., 1889, p. 479.

There were specimens from Yokohama in Pryer's collection, and I obtained the species at Fushiki in July, and have received it from Chang-yang, where it was taken in August. These I have referred to var. *stictica*, Mén. Staudinger records examples from Amurland as var. *mendacula*, Hübn.

*Distribution.* EUROPE.—AMURLAND; CENTRAL CHINA; JAPAN.

### 1071. *Bryophila fraudatricula.*

*Noctua fraudatricula*, Hübn., Noct., fig. 28.
*Bryophila fraudatricula*, Boisd., Icon., pl. lxxi.

There were two specimens in Pryer's collection which seem to be referable to this species. They are darker in coloration than any example in my European series, but they agree almost exactly in marking.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

### 1072. *Bryophila chloromixta.*

*Bryophila chloromixta*, Alph., Rom. sur Lép., vi, p. 21, pl. ii, fig. 1 ♂ (1892).

Specimens have been received from Chang-yang, Ta-chien-lu, Chia-kou-ho, Moupin, Omei-shan, and Pu-tsu-fong. Occurs in July and August. Alphéraky's type was from the province of Gan-sou.

Varies in tint and in the definition of the transverse markings.

*Habitat.* CENTRAL and WESTERN CHINA.

*Bryophila confucii*, Alph., is also from the province of Gan-sou (Rom. sur Lép., vi, p. 19, pl. i, fig. 8 ♀).

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### 1073. *Bryophila* (?) *griseata*, sp. n.

Primaries dark grey clouded with blackish, paler grey towards the base and on the outer margin; sub-basal line black indistinct; antemedial and postmedial lines black, dentate, edged with pale grey, the former with a whitish spot before it on the inner margin; reniform and orbicular stigmata outlined in pale grey; there is a whitish spot on the costa above the reniform, and three dots beyond it; fringes grey marked with whitish, and preceded by an interrupted black line which is inwardly edged by a series of whitish dots. Secondaries fuscous-brown; fringes pale grey preceded by an interrupted black line. Under surface of primaries pale grey, suffused with blackish on the discal area; secondaries pale grey dusted with darker, discal dot and angulated transverse line blackish.

Expanse 35 millim.

The postmedial line is sometimes edged with white throughout its length.

One male specimen from Chang-yang, one from Kiu-kiang, and one from Ichang Gorge; the latter was taken in September and the others in May.

*Habitat.* CENTRAL CHINA.

### 1074. *Bryophila* (?) *confusa*.

*Moma confusa*, Leech, Proc. Zool. Soc. Lond., 1889, p. 480, pl. l, fig. 5.

One male specimen (the type) in Pryer's collection, probably from Yokohama.

*Habitat.* JAPAN.

### 1075. Genus SCOLOPOCNEME.

Felder, Wien. ent. Mon., vi, p. 37 (1862).

#### *Scolopocneme bufonia.*

*Scolopocneme bufonia*, Feld., Wien. ent. Mon., iv, p. 38 (1862).

The type, a female specimen, was described from Ningpo; I am not acquainted with this species.

*Habitat.* EASTERN CHINA.

### Genus ERASTRIA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 300 (1894).

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1076. *Erastria fasciana.*

*Tortrix fasciana*, Linn., Faun. Suec., p. 342 (1761).
*Noctua fuscula*, Bork., Eur. Schmett., iv, p. 192; Hübn., Noct., fig. 297.
*Bryophila guenei*, Fall., Ann. Soc. Ent. Fr., 1864, p. 27, pl. i, fig. 3.
*Erastria stygia*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 199 (1878); Ill. Typ. Lep. Het., iii, p. 20, pl. xlvi, fig. 2 (1879).
*Erastria distinguenda*, Staud., Rom. sur Lép., vi, p. 564, pl. xi, fig. 2 (1892).

I obtained this species at Nagasaki in May, and at Gensan in June and July; my native collector took specimens at Ningpo in July, and those in Pryer's collection were from Yokohama and Oiwake. I have also received examples from Ichang, Chow-pin-sa, and the island of Kiushiu.

*Stygia*, Butl., differs so little from typical *fasciana*, that the name seems to be hardly worth retaining even in a varietal sense.

Staudinger states that his *distinguenda* always has the fringes of secondaries chequered, and that the fringes of the secondaries of *fasciana* are never chequered. I find that some of my specimens, agreeing in all other characters with *distinguenda*, have the fringes of secondaries plain, whereas some of the more or less typical examples of *fasciana* have chequered fringes to the secondaries.

The Eastern Asian series of *E. fasciana* in my collection comprises forty-four specimens, and embraces all the European forms, as well as those that have been named from Eastern Asia. There are also two forms from Japan that do not seem to be represented in Europe; in one of these the white patch on inner margin of primaries is traversed by a black sinuous line; in the other, the ground colour of primaries is of a pale olive-brown, with no dark markings, and the secondaries are almost of the same tint. All these forms, with the exception of the colour aberration last referred to, are connected with each other and with the type by intergrades.

In the case of polymorphic species, the naming of varieties only leads to confusion, as it is not possible to satisfactorily place the intergrades; I have, therefore,

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refrained from suggesting varietal names for the two Japanese forms adverted to above.

*Distribution.* EUROPE.—AMURLAND; JAPAN; KIUSHIU; COREA; EASTERN, CENTRAL, and WESTERN CHINA.

### 1077. *Erastria numisma.*

*Erastria numisma*, Staud., Stett. Ent. Zeit., 1888, p. 265; Rom. sur Lép., vi, p. 564, pl. xi, fig. 3 (1892).
*Erastria olivacea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 526, pl. liii, fig. 1.

Occurs at Oiwake, Gensan, and Chang-yang.

The Gensan specimens in my series were taken in July, and the only example from Chang-yang that I have was captured in August; the latter is in poor condition.

*Distribution.* AMURLAND; COREA; CENTRAL CHINA; JAPAN.

### 1078. *Erastria nivata*, sp. n.

Differs from *E. numisma*, Staud. (= *olivacea*, Leech) in being larger; the median nervure is broadly white, the orbicular stigma is smaller; the postmedial line is interrupted with white towards the costa, and lunulated towards inner margin; from the black apical patch, which is traversed by the white submarginal line, there is a transverse series of black dots preceded by a white band. The secondaries are rather paler. On the under surface the colour and markings are almost identical with those of *E. numisma*.

Expanse 26 millim.

One male specimen from Chang-yang, taken in May.

*Habitat.* CENTRAL CHINA.

### 1079. *Erastria brunnea.*

*Erastria brunnea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 527, pl. liii, fig. 2.

Seven specimens in Pryer's collection, probably from Yokohama.

*Habitat.* JAPAN.

### 1080. *Erastria rosacea.*

*Erastria rosacea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 527, pl. liii, fig. 9.

Four specimens from Oiwake in Pryer's collection.

*Habitat.* JAPAN.

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1081. *Erastria falsa.*

*Miana falsa*, Butl., Cist. Ent., iii, p. 132 (1885); Leech, Proc. Zool. Soc. Lond., 1889, p. 491.

Two examples in Pryer's collection, probably from the neighbourhood of Yokohama, as I have received others from Mr. Manley which were taken in that district. Mr. Smith captured two examples at Hakone in the month of August, but these are rather darker than the others in the series, and one of the examples is without pale patch at outer angle.

*Habitat.* JAPAN.

1082. *Erastria atrata.*

*Erastria atrata*, Butl., Trans. Ent. Soc., 1881, p. 188.
*Erastria sidemiata*, Oberth., Etud. d'Entom., x, p. 25, pl. iii, fig. 6 (1884).

Described from Tokio. Pryer's specimens were from Yokohama and Oiwake. The Japanese and Amurland examples in my collection are exactly alike.

*Distribution.* AMURLAND; JAPAN.

1083. *Erastria senex.*

*Erastria senex*, Butl., Trans. Ent. Soc., 1889, p. 189.

Described from a Tokio specimen; there were examples from Yokohama in Pryer's collection, and I obtained a few at Nagasaki in June.

*Habitat.* JAPAN and KIUSHIU.

1084. *Erastria nemorum.*

*Erastria nemorum*, Oberth., Etud. d'Entom., v, p. 82, pl. iv, fig. 2 (1880).
*Erastria africana*, Leech, Proc. Zool. Soc. Lond., 1889, p. 525.

Pryer's specimens were not localized; I took a good series at Gensan in June.

*Distribution.* JAPAN; COREA; AMURLAND.

1085. *Erastria candidula.*

*Noctua candidula*, Bork., Eur. Schmett., iv, p. 196; Hübn., Noct., fig. 295.

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*Erastria candidula*, Treit., Schmett., v, p. 263; Leech, Proc. Zool. Soc. Lond., 1889, p. 525.
*Erastria pusilla*, View.; Staud., Rom. sur Lép., vi, p. 563 (1892).

Examples were taken by myself at Gensan in July, and by my native collector at Hakodate in June or July. Pryer's specimens were from Oiwake and Yesso, and the species has also been recorded from Tokio.

Eastern Asian specimens are more strongly marked than those from Europe in my collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA.

1086. *Erastria costimacula.*

*Erastria costimacula*, Oberth., Etud. d'Entom., v, p. 83, pl. iv, fig. 4 (1880).

There were six specimens, probably from Yokohama, in Pryer's collection.

I have an example from Ichang, taken in July, which appears to be referable to this species, but the primaries are suffused with dark grey.

Staudinger (Rom. sur Lép., vi, p. 567) suggests that this species is allied to *Rivula sericealis.*

*Distribution.* JAPAN; CENTRAL CHINA; AMURLAND.

1087. *Erastria vulnerata.*

*Miana vulnerata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 84 (1878); Ill. Typ. Lep. Het., ii, p. 25, pl. xxix, fig. 4 (1878).

I obtained specimens at Gensan in June, and at Fushiki in July. Pryer's examples were from Yokohama, Gifu, and Yesso; I have also received the species from Ichang.

*Distribution.* JAPAN; YESSO; COREA; CENTRAL CHINA.

1088. *Erastria confusa*, sp. n.

Primaries greyish-brown clouded with dark brown and blackish ante- and postmedial lines whitish edged with black, both wavy, the latter commencing in a greyish patch on the costa, and excurved beyond the cell; submarginal line blackish, diffuse, angled below costa, thence wavy to inner margin, outwardly bordered with greyish; reniform and orbicular stigmata greyish, the outlines rather paler; a quadrate black spot between them, the space below them, and between

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the transverse lines, blackish; the space between postmedial and submarginal lines brownish; fringes dark and pale grey chequered, preceded by an interrupted black line. Secondaries pale fuscous with indications of a darker postmedial line; fringes preceded by a black line. Under surface pale fuscous: primaries with a dusky postmedial line, and dusky suffusion between this line and the base of the wing; secondaries with a blackish discal dot and postmedial series of dark specks.

Expanse 28 millim.

Two female specimens, taken in June and July, at Putsu-fong.

*Habitat.* WESTERN CHINA.

1089. *Erastria squalida.*

*Erastria squalida*, Leech, Proc. Zool. Soc. Lond., 1889, p. 527, pl. lii, fig. 9.

One male specimen from Nagasaki, and an example of each sex from Ningpo, all taken in June.

*Distribution.* KIUSHIU; EASTERN CHINA.

1090. *Erastria* (?) *flavicollis.*

*Erastria flavicollis*, Leech, Proc. Zool. Soc. Lond., p. 525, pl. liii, fig. 4.

One example (the type) from Oiwake in Pryer's collection.

*Habitat.* JAPAN.

1091. *Erastria* (?) *flavipuncta.*

*Erastria flavipuncta*, Leech, Proc. Zool. Soc. Lond. 1889, p. 524, pl. liii, fig. 3.

One example (the type) from Yokohama in Pryer's collection.

*Habitat.* JAPAN.

1092. *Erastria* (?) *fentoni.*

*Erastria fentoni*, Butl., Trans. Ent. Soc. Lond., 1881, p. 190.

Described from Tokio. Pryer's specimens were from Yokohama and Oiwake, and I obtained the species at Gensan in July.

*Distribution.* JAPAN; COREA.

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1093. *Erastria* (?) *mandarina*, sp. n.

Closely allied to *E. fentoni*, Butl.; colour and marking of primaries very similar but the white line limiting the basal half is inwardly oblique from the costa to below the middle, thence slightly curved to inner margin; the submarginal line is yellowish and wavy; there are no white apical spots; fringes dark grey, rather paler at the tips. Secondaries pale stramineous, slightly suffused with fuscous towards the base; fringes dark grey tipped with paler, and preceded by a blackish line. Under surface of primaries fuscous on basal half, whitish on outer half, and dusted with fuscous; a dusky, elbowed, transverse line; secondaries whitish powdered with fuscous.

Expanse 30 millim.

Two examples of each sex from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

Genus PROTHYMIA.

Hübner, Verz. Schmett., p. 282.

1094. *Prothymia viridaria.*

*Phalæna viridaria*, Clerck., Icon., pl. ix, fig. 12 (1759).
*Noctua ænea*, Hübn., Noct., figs. 350, 654.
*Prothymia viridaria*, Leech, Proc. Zool. Soc. Lond., 1889, p. 521.

There was a specimen, probably from Yokohama, in Pryer's collection which appears to be referable to this species.

*Distribution.* EUROPE.—JAPAN.

Genus HYELOPSIS.

Hampson, Fauna Brit. Ind., Moths, ii, p. 304 (1894).

1095. *Hyelopsis signifera.*

*Acontia signifera*, Walk., Cat. Lep. Het., xii, p. 793.
*Acontia subfixa*, Walk., Cat. Lep. Het., Suppl., v, p. 1964.
*Hyelopsis signifera*, Hampson, Fauna Brit. Ind., Moths, ii, p. 304 (1894).

Specimens were taken by myself in Satsuma in May, and at Nagasaki in June, and by my native collector at Gensan in September; those in Pryer's collection were from Yokohama; the species has also been recorded from



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Tokio and from Shanghai, and I have received specimens, taken in June and August, from Ichang.

*Distribution.* Throughout INDIA, CEYLON and BURMA; ANDAMANS; PENANG; AUSTRALIA (*Hampson*); JAPAN; KIUSHIU; EASTERN and CENTRAL CHINA; COREA.

### 1096. *Hyelopsis magna*, sp. n.

Differs from *H. signifera* in its larger size. On the upper surface the markings of primaries are paler; the basal half of the wings is clearer white, and the sub-basal black speck is absent; the reniform stigma is white, with a minute black dot at its upper and lower extremities respectively, but there is no black spot beyond; the postmedial line is serrated beyond the cell and edged with white, thus connecting the white patches on costal and inner areas; the submarginal line is not clearly defined, but there are some black triangles on it about the middle and towards the costa.

Expanse 24 millim.

One female specimen from Ta-chien-lu, taken in May or June.

*Habitat.* WESTERN CHINA.

### 1097. *Hyelopsis arefacta.*

*Acontia arefacta*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 366 (1879).

Specimens were obtained by myself at Foochau in April, in Satsuma in May, and at Nagasaki in June; my collector took some examples at Ningpo in June, and there were others from Yokohama in Pryer's collection. The species has also been recorded from Chekiang.

*Distribution.* JAPAN; KIUSHIU; EASTERN CHINA.

### 1098. *Hyelopsis vialis.*

*Acontia vialis*, Moore, Lep. Atk., ii, p. 135 (1882).
*Hyelopsis vialis*, Hampson, Fauna Brit. Ind., Moths, ii, p. 304 (1894).
*Thalpochares bella*, Staud., Stett. Ent. Zeit., 1888, p. 264; Rom. sur Lép., vi, p. 559, pl. xi, fig. 1 (1892).

Five specimens in Pryer's collection from Oiwake, Yokohama, and Yesso. I have also one example from Moupin, and one from Chow-pin-sa.

Staudinger, who describes this species from Amurland as "*T.*" *bella*, records a specimen from the north of Pekin,

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My Japanese specimens agree with the figure of *bella* in colour, which is pinkish-brown, but the examples from Western China are referable to the type form. *Bella* may be retained as a varietal name.

*Distribution.* DHARMSÁLA; SIKHIM; NILGIRIS (*Hampson*); NORTHERN and WESTERN CHINA; AMURLAND; JAPAN; YESSO.

## Genus HYELA.

Steph.; Hampson, Fauna Brit. Ind., Moths, iii, p. 307 (1894).

### 1099. *Hyela uncula.*

*Tortrix uncula*, Clerck., Icon., pl. iii, fig. 7 (1759).
*Erastria unca*, Treit., Schmett., v, 3, p. 253.
*Hydrelia unca*, Guen., Noct., ii, p. 235.
*Hyela uncula*, Hampson, Fauna Brit. Ind., Moths, ii, p. 307 (1894).

There was one specimen from Oiwake in Pryer's collection, and I took the species at Hakodate in August.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO.

### 1100. *Hyela bankiana.*

*Pyralis bankiana*, Fabr., Sp. Ins., ii, p. 275.
*Noctua argentula*, Esp., Schmett., iv, pl. clxiii, fig. 4.
*Argyrostrotis olivea*, Hübn., Verz. Schmett., p. 253.
*Erastria argentula*, Treit., Schmett., v, p. 255; Alph., Rom. sur Lép., vi, p. 43; Staud., *op. cit.*, p. 562 (1892).
*Bankia argentula*, Guen., Noct., ii, p. 231.

Alphéraky records this species from the province of Gansou, and Staudinger describes var. *amurula* from Amurland, and states that it is smaller than typical *argentula*, and rather darker reddish-brown in colour.

*Distribution.* EUROPE.—AMURLAND; WESTERN CHINA.

## Genus MICARDIA.

Butler, Ann. and Mag. Nat. Hist., (5) i, p. 81 (1878).

### 1101. *Micardia pulchra.*

*Micardia pulchra*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 81 (1878); Ill. Typ. Lep. Het., ii, p. 23, pl. xxviii, fig. 4 (1878).

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Occurs at Yokohama, in the island of Kiushiu, and at Gensan. July.

*Distribution.* JAPAN; KIUSHIU; COREA.

### 1102. *Micardia argentata.*

*Micardia argentata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 81 (1878); Ill. Typ. Lep. Het., ii, p. 23, pl. xxviii, fig. 3 (1878).

Occurs at Yokohama, Nikko, Kiushiu, and Gensan in July.

*Distribution.* JAPAN; KIUSHIU; COREA.

### 1103. *Micardia munda*, sp. n.

Head, thorax, and abdomen ochreous; patagia and tegulæ purplish. Primaries ochreous, base of costal area tinged with purplish; a purplish stripe from the middle of the base of the wing to the apex; the lower edge of this is angled and bordered with silvery, and there is a silvery streak on the middle portion of its upper edge; fringes fuscous. Secondaries pale stramineous. Under surface of primaries ochreous, suffused with fuliginous on the discal area; secondaries as above.

Expanse 30 millim.

Two male specimens taken in June or July at Pu-tsu-fong.

*Habitat.* WESTERN CHINA.

Allied to *M. pulcherrima*, Moore.

## Genus TARACHE.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 310 (1894).

### 1104. *Tarache maculosa.*

*Acontia maculosa*, Walk., Cat. Lep. Het., xii, p. 795 (1857); Butl., Ill. Typ. Lep. Het., iii, p. 20, pl. xlvi, fig. 1 (1879).

*Tarache tropica*, Hampson, Fauna Brit. Ind., Moths, ii, p. 314 (1894).

*Maculosa* was described by Walker from China, but I have not received the species from any part of the country that my collectors passed through.

*Habitat.* CHINA.

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### 1105. *Tarache sulphuralis.*

*Pyralis sulphuralis*, Bergst., Ins. Suec., i, p. 16; Linn., Syst. Nat., xii, p. 881 (1766).
*Pyralis trabealis*, Scop., Ent. Carn., p. 40 (1763).
*Agrophila trabealis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 528.
*Tarache sulphuralis*, Hampson, Fauna Brit. Ind., Moths, ii, p. 315 (1894).

Specimens from Oiwake and Yesso in Pryer's collection my native collector took the species at Hakodate in June or July, and at Gensan in September.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA.

### 1106. *Tarache bicolora.*

*Acontia bicolora*, Leech, Trans. Ent. Soc., 1889, p. 133, pl. ix, figs. 7 ♂, 7a ♀.

There were some specimens in Pryer's collection, but these were not localized; I have other examples from Satsuma, Nagasaki, Gensan, Ningpo, Chang-yang, and Kiukiang.

*Distribution.* JAPAN; KIUSHIU; COREA; EASTERN and CENTRAL CHINA.

### 1107. *Tarache* (?) *pulchella.*

*Acontia pulchella*, Leech, Proc. Zool. Soc. Lond., 1889, p. 524, pl. liii, fig. 10.

One example (the type) from Ohoyama in Pryer's collection.

*Habitat.* JAPAN.

### 1108. *Tarache* (?) *tripartita*, sp. n.

Primaries olivaceous-brown, except the central third which is white, contracted below the middle and marked with the ground colour on the costa; there is a white dash before the apex, and some white dots on the apical third of the costa; discal mark blackish, elongate; fringes obscurely speckled with white. Secondaries fuscous, with dusky discal mark and blackish marginal line. Under surface pale brown; primaries suffused with fuscous, a white spot and some dots on apical third of costa; secondaries powdered with fuscous, discal mark and marginal line blackish.

Expanse 24 millim.

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One female specimen from Chow-pin-sa, taken in May or June.

*Habitat.* WESTERN CHINA.

### Genus XANTHOPTERA.

Guen.; Hampson, Fauna Brit. Ind., Moths, ii, p. 316 (1894).

#### 1109. *Xanthoptera obliterata.*

*Anthophila obliterata*, Ramb., Ann. Soc. Ent. France, ii, p. 27, pl. ii, fig. 17 (1833).
*Anthophila wimmeri*, Treit., Suppl., x, p. 148 (1835).
*Erastria obliterata*, Staud., Rom. sur Lép., vi, p. 562 (1892).
*Phyllophila cretacea*, Butl., Ill. Typ. Lep. Het., iii, p. 28, pl. xlvii, fig. 11 (1879).

The specimens in Pryer's collection were probably from Yokohama, from which locality *cretacea*, Butl., was described. I obtained the species at Gensan, and have received one example from Chang-yang.

*Distribution.* EUROPE.—ALTAI; PERSIA; AMURLAND; JAPAN; COREA; NORTHERN CENTRAL CHINA.

#### 1110. *Xanthoptera spicea.*

*Perigea spicea*, Guen., Noct., i, p. 226 (1852).
*Perigea tricycla*, Guen., *l. c.*
*Bagada pyrochroma*, Walk., Cat. Het., xv, p. 1753 (1858); Hampson, Ill. Typ. Lep. Het., ix, pl. clxii, fig. 2, and pl. clxxvi, fig. 20 (1893).
*Xanthoptera spicea*, Hampson, Fauna Brit. Ind., Moths, ii, p. 319 (1894).

One female specimen from Ship-y-shan, taken in September. This example agrees more closely with *tricycla* than with the type.

*Distribution.* SIMLA; SILHET; WEST INDIA; NILGIRIS; CEYLON; JAVA (*Hampson*); CENTRAL CHINA.

### Genus MICROPHYSA.

Boisd.; Guenée, Noct., ii, p. 257 (1852).

#### 1111. *Microphysa inamæna.*

*Noctua inamæna*, Hübn., Eur. Schmett. Noct., figs. 301, 302.

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*Odice inamæna*, Hübn., Verz. Schmett., p. 258.
*Ophiusa inamæna*, Treit., Schmett., v, p. 285.
*Microphysa inamæna*, Guen., Noct., ii, p. 259.
*Thalpochares arcuinna*, Staud., Cat., 1871, p. 131.

I have one example from Gensan, which appears to agree with some indistinctly marked European examples in my collection.

According to Staudinger (Rom. sur Lép., vi, p. 558) Hertz records the species from the north of Pekin.

*Distribution.* EUROPE.—COREA; NORTH CHINA.

## Genus COSMIA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 321 (1894).

### 1112. *Cosmia restituta.*

*Cosmia restituta*, Walk., Cat. Lep. Het., x, p. 490 (1856); Hampson, Fauna Brit. Ind., Moths, ii, p. 321 (1894).
*Calymnia restituta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 516.
*Calymnia picta*, Staud., Stett. Ent. Zeit., 1888, p. 257; Rom. sur Lép., vi, p. 503, pl. x, fig. 2 (1892).
*Calymnia dieckmanni*, Graeser, Berl. Ent. Zeit., 1888, p. 353.

One example from Yesso in Pryer's collection.

*Distribution.* MURREE; NEPAL (*Hampson*); YESSO; AMURLAND.

### 1113. *Cosmia cara.*

*Dryzela cara*, Butl., Trans. Ent. Soc. Lond., 1881, p. 188.
*Cosmia cara*, Butl., Entom., xxv, p. 140 (1892).

The type, from Tokio, is in the National Museum at South Kensington; this is the only example of the species that I have seen.

*Habitat.* JAPAN.

### 1114. *Cosmia affinis.*

*Noctua affinis*, Linn., Syst. Nat., xii, p. 848; Hübn., Noct., fig. 201.
*Cosmia affinis*, Treit., Schmett., v, p. 389; Hampson, Fauna Brit. Ind., Moths, ii, p. 321 (1894).
*Calymnia affinis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 515.

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*Calymnia affinis*, var. *unicolor*, Staud., Rom. sur Lép., vi, p. 502 (1892).

Specimens from Oiwake and Yesso in Pryer's collection; I obtained one example at the former locality in October, and my native collector took the species in the island of Kiushiu.

The Japanese specimens are generally larger than European examples, and three of mine are referable to var. *unicolor*, Staud., of which form I have also European representatives.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; KIUSHIU; KASHMIR.

1115. *Cosmia pyralina.*

*Noctua pyralina*, View., Tab. Verz., p. 87; Hübn., Noct., fig. 203.

*Cosmia pyralina*, Treit., Schmett., v, 2, p. 392.

*Calymnia pyralina*, Leech, Proc. Zool. Soc. Lond., 1889, p. 315.

There were some very typical specimens from Oiwake and Yesso in Pryer's collection.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO.

1116. *Cosmia camptostigma.*

*Heliothis camptostigma*, Mén., Bull. de l'Acad., xvii, p. 219; Schr., Reis. Amur., pl. v, figs. 1, 2 (1859).

*Cosmia distincta*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 192 (1878); Ill. Typ. Lep. Het., ii, p. 32, pl. xxxi, fig. 2 (1878); Oberth., Etud. d'Entom., vi, p. 19, pl. ix, fig. 7 (1881).

*Calymnia camptostigma*, Leech, Proc. Zool. Soc. Lond., 1889, p. 515.

I have specimens from Hakodate, taken in July, and there was a series from Yokohama and Oiwake in Pryer's collection. Oberthür records *C. distincta*, Butl., from Kouy-Tchéou.

I have a series of twelve specimens from Chabarowka, Amurland; these vary to a greater extent than the examples from Japan and Yesso.

The larva is described by Graeser (Berl. Ent. Zeit., 1888, p. 355).

*Distribution.* AMURLAND; JAPAN; YESSO; WESTERN CHINA.

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1117. *Cosmia achatina.*

*Cosmia achatina*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 365 (1879).
*Calymnia achatina*, Leech, Proc. Zool. Soc. Lond., 1889, p. 515.

Six specimens from Yokohama and two from Yesso in Pryer's collection; the latter are much darker than the others, but are, without doubt, specifically identical with them.

*Habitat.* JAPAN and YESSO.

1118. *Cosmia pembertoni.*

*Cosmia pembertonii*, Holl., Trans. Amer. Ent. Soc., xvi, p. 75 (1889).

Described from Shirakawa.

*Habitat.* JAPAN.

1119. *Cosmia trapezina.*

*Noctua trapezina*, Linn., Syst. Nat., x, p. 510; Hübn., Noct., fig. 200.
*Cosmia trapezina*, Treit., Schmett., v, 2, p. 383.
*Mesogona exigua*, Butl., Trans. Ent. Soc. Lond., 1881, p. 182.
*Calymnia trapezina*, Leech, Proc. Zool. Soc. Lond., 1889, p. 515.
*Calymnia trapezina*, var. *saturata*, Staud., Rom. sur Lép., vi, p. 504 (1892).

I have specimens from Oiwake, Tokio, and Yesso, also one example from Chang-yang.

Eastern Asian specimens of this species are rather darker, especially on the secondaries, and more uniform in colour than is usually the case in European examples. The form is well described by Butler under the name *exigua*. Staudinger re-describes the same form as var. *saturata*, and although he refers to Butler's *exigua*, he does not appear to have understood the description.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; CENTRAL CHINA.

1120. *Cosmia retusa.*

*Noctua retusa*, Linn., Faun. Suec., p. 321; Hübn., Noct., fig. 214.

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*Tethea retusa*, Guen., Noct., ii, p. 3.
*Cosmia curvata*, Butl., Trans. Ent. Soc. Lond., 1886, p. 131.
*Ipimorpha retusa*, Leech, Proc. Zool. Soc. Lond., 1889, p. 516.
*Plastenis retusa*, Staud., Rom. sur Lép., vi, p. 510 (1892).

Specimens from Yokohama, Nikko, and Yesso in Pryer's collection; these agree with *curvata*, Butl., from Fukushima, which is specifically identical with *retusa*.

*Distribution*. EUROPE.—AMURLAND; JAPAN; YESSO.

1121. *Cosmia pryeri*.

*Calymnia pryeri*, Leech, Proc. Zool. Soc. Lond., 1889, p. 516, pl. li, fig. 11.

I have three specimens from Oiwake, two of which are females.

This species somewhat resembles *Mesogona oxalina* from Europe; it varies in tint of primaries, and the secondaries in two examples are more suffused with fuscous than in the type. Perhaps it may eventually prove to be a form of "*Grammesia*" *bifasciata*, Staud., from Amurland, but the latter is darker in colour, and the post-medial line of primaries is more distinctly curved.

*Habitat*. JAPAN.

Genus ECCOPTEROMA.

Staudinger, Rom. sur Lép., vi, p. 506 (1892).

1122. *Eccopteroma falcata*.

*Calymnia falcata*, Graeser, Berl. Ent. Zeit., 1889, p. 257.
*Eccopteroma falcata*, Staud., Rom. sur Lép., vi, p. 506 (1892).

Described by Graeser from Amurland.

One male specimen and two females from Oiwake in Pryer's collection.

*Distribution*. AMURLAND; JAPAN.

Genus MESOGONA.

Boisduval, Ind. Méth., p. 144 (1829).

1123. *Mesogona divergens*.

*Mesogona divergens*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 364 (1879).

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*Xanthia coriacea*, Graeser, Berl. Ent. Zeit., 1888, p. 357.
*Xanthia divergens*, Staud., Rom. sur Lép., vi, p. 514, pl. ix, fig. 8 (1892).

Pryer's series comprised examples from Yokohama and Oiwake; my native collector obtained a specimen in the island of Kiushiu.

*Distribution.* AMURLAND; JAPAN; KIUSHIU.

1124. *Mesogona contracta.*

*Mesogona contracta*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 169 (1878); Ill. Typ. Lep. Het., ii, p. 31, pl. xxxi, fig. 1 (1878).

All the specimens in Pryer's collection were from Yokohama.

*Habitat.* JAPAN.

1125. *Mesogona quadrilinea.*

*Mesogona quadrilinea*, Leech, Proc. Zool. Soc. Lond., 1889, p. 519, pl. li, fig. 1.

There were two specimens in Pryer's collection, these were probably from Yokohama.

*Habitat.* JAPAN.

Genus ACONTIA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 322 (1894).

1126. *Acontia transversa.*

*Xanthodes transversa*, Guen., Noct., ii, p. 211, pl. x, fig. 5 (1852); Leech, Proc. Zool. Soc. Lond., 1889, p. 518.
*Acontia transversa*, Hampson, Fauna Brit. Ind., Moths, ii, p. 323 (1894).

The specimens in Pryer's collection were from Loochoo, and I have others from Hakone, Gensan, Ichang, and Omei-shan.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; JAVA; DUKE OF YORK ISLE (*Hampson*); JAPAN; COREA; CENTRAL and WESTERN CHINA.

1127. *Acontia mollis.*

*Poaphila mollis*, Butl., Ill. Typ. Lep. Het., iii, p. 28, pl. xlvii, fig. 10 (1879).

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There were specimens from Yokohama in Pryer's collection. I obtained the species at Tsuruga and at Fushiki in July.

*Habitat.* JAPAN.

## Genus METACHROSTIS.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 325 (1894).

### 1128. *Metachrostis punctigera.*

*Ozarba punctigera*, Walk., Cat. Lep. Het., Suppl., ii, p. 685 (1865).

*Metachrostis punctigera*, Hampson, Fauna Brit. Ind., Moths, ii, p. 329 (1894).

Pryer's specimens were from Yokohama. I obtained the species in Satsuma in May; Mr. Andrews took examples at Hakodate in August, and my native collector at Gensan in the same month, and also in the island of Kiushiu.

*Distribution.* DHARMSÁLA; throughout the BOMBAY and MADRAS PRESIDENCIES; AUSTRALIA (*Hampson*); JAPAN; YESSO; KIUSHIU; COREA.

### 1129. *Metachrostis chinensis*, sp. n.

Primaries pale olive-brown, tinged with pinkish on the disc and with darker at the base; a blackish oblique line from inner margin near base extending to median nervure; a blackish oblique band from just before the middle of inner margin to costa near apex; orbicular and reniform outlined in ground colour, the latter stigma with a somewhat similar mark above; submarginal band, dusky, attenuated towards the costa; fringes of the ground colour marked with blackish except at apex and outer angle, preceded by a blackish line. Secondaries fuscous, fringes preceded by a darker line. Under surface pale brown: primaries suffused with fuscous on disc, a pale brown spot on costa beyond the middle.

Expanse 18 millim.

One example of each sex taken at Ship-y-shan in September.

*Habitat.* CENTRAL CHINA.

### 1130. *Metachrostis noloides.*

*Acontia noloides*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 366 (1879).

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A series in Pryer's collection from Yokohama and Yesso.

*Habitat.* JAPAN and YESSO.

### 1131. *Metachrostis brunnea*, sp. n.

Primaries pinky-brown with some darker brown clouds on basal area; central fascia dark brown, bifurcated towards the costa; reniform and orbicular stigmata outlined in paler, the former inwardly edged with blackish and followed by some blackish streaks; fringes preceded by a brown line, which terminates in a black dot below vein 2. Secondaries fuscous, fringes pale brown tipped with fuscous and preceded by a darker line. Under surface fuscous, paler on costa and inner margin of primaries, and on the abdominal half of the secondaries.

Expanse 16–18 millim.

One male specimen from Ichang, and one from Changyang. Occurs in June and August.

*Habitat.* CENTRAL CHINA.

## Genus NARANGA.

Moore, Proc. Zool. Soc. Lond., 1881, p. 359.

### 1132. *Naranga diffusa.*

*Xanthodes diffusa*, Walk., Cat. Lep. Het., xxxiii, p. 779 (1865).

*Naranga diffusa*, Moore, Lep. Ceyl., iii, p. 49, pl. cl, fig. 17 (1884).

*Naranga quadrivittata*, Moore, Lep. Atk., ii, p. 134 (1882).

*Naranga ferruginea*, Moore, *l. c.*

*Naranga diffusa*, Hampson, Fauna Brit. Ind., Moths, ii, p. 333 (1894).

There were two examples of the male in Pryer's collection, and six females. I obtained the species at Tsuruga and Fushiki in July, and my native collector took specimens in the island of Kiushiu.

*Distribution.* FORMOSA; DHARMSÁLA; PENINSULAR INDIA and CEYLON; BURMA; JAVA (*Hampson*); JAPAN; KIUSHIU.

### 1133. *Naranga hebescens.*

*Anthophila hebescens*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 366 (1879).

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The specimens in Pryer's collection were from Yokohama.

*Habitat.* JAPAN.

1134. *Naranga curvifera.*

*Hydrelia curvifera*, Walk., Trans. Ent. Soc. Lond., 3rd ser., i, p. 91 (1862–64).

*Erastria securifera*, Walk., Journ. Linn. Soc. Lond., vii, p. 58.

*Hyela senna*, Swinhoe, Trans. Ent. Soc. Lond., 1891, p. 148, pl. viii, fig. 14.

*Naranga curvifera*, Hampson, Fauna Brit. Ind., Moths, ii, p. 334 (1894).

I have three specimens taken by a native collector at Gensan in September, and there were two examples in Pryer's collection.

*Distribution.* CEYLON; RANGOON; BORNEO (*Hampson*); JAPAN?; COREA.

Genus RIVULA.

Guenée; Dup., Cat. Lép. Eur., p. 206 (1844).

1135. *Rivula sericealis.*

*Pyralis sericealis*, Scop., Ent. Carn., p. 242 (1763); Hübn., Pyral., fig. 56.

*Rivula sericealis*, Dup., Lép., p. 145, pl. cxix, figs. 4, 5.

I obtained specimens at Nagasaki in May, and at Gensan in June; there were examples in Pryer's collection, and I have received the species from Ichang and Chang-yang.

Alphéraky (Rom. sur Lép., vi, p. 51) records a male specimen from Ou-pin in Gan-sou, and Staudinger mentions the species as occurring at several places in Amurland.

*Distribution.* EUROPE.—AMURLAND; JAPAN; KIUSHIU; COREA; CENTRAL and WESTERN CHINA.

1136. *Rivula bioculalis.*

*Rivula bioculalis*, Moore, Proc. Zool. Soc. Lond., 1877, p. 614; Hampson, Fauna Brit. Ind., Moths, ii, p. 334 (1894).

*Hydrelia opalescens*, Butl., Ill. Typ. Lep. Het., vii, p. 64, pl. cxxix, fig. 10 (1886).

*Meranda inconspicua*, Butl., Trans. Ent. Soc. Lond., 1881, p. 583.

*Inconspicua*, Butl., was described from Yokohama. I

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took examples of this form at Ningpo in April, and at Nagasaki in May; my native collector obtained the species at Ningpo in June. I have also received a specimen from Chang-yang; this is darker than the others in my series.

*Distribution.* HIMALAYAS; KHÁSIS; CALCUTTA; NILGIRIS; CEYLON; BURMA; ANDAMANS; BORNEO (*Hampson*); EASTERN and CENTRAL CHINA; JAPAN; KIUSHIU.

1137. *Rivula tristalis.*

*Meranda tristalis,* Leech, Entom., xxii, p. 65, pl. ii, fig. 6 (1889).

The type, a male specimen, was taken by myself in Satsuma in May.

*Habitat.* KIUSHIU.

1138. *Rivula subrosea.*

*Rivula subrosea,* Butl., Trans. Ent. Soc. Lond., 1881, p. 580.

There were specimens in Pryer's collection, and I have also one example from Kiushiu.

*Habitat.* JAPAN; KIUSHIU.

1139. *Rivula flavomacula.*

*Madopa flavomacula,* Oberth., Etud. d'Entom., v, p. 87, pl. iv, fig. 5 (1880).

I obtained this species at Ningpo in April, in Satsuma in May, at Nagasaki and at Gensan in June; other specimens were received from Moupin, Omei-shan, and Chow-pin-sa, all taken in the month of June.

*Distribution.* AMURLAND; KIUSHIU; COREA; EASTERN and WESTERN CHINA.

1140 *Rivula* (?) *bilinealis,* sp.

Primaries pale brown with a slight pinkish tinge; ante- and post-medial lines, black, obliquely wavy, edged with pinkish-brown, broadly so at the costal extremity of the postmedial; submarginal line indicated by a series of dark specks; there is a black colon-like mark at outer end of the cell; fringes pinkish-brown preceded by a line of the same colour and a series of black points. Secondaries slightly paler, with brownish central and submarginal transverse lines; fringes of the ground colour, preceded by a pinkish-brown line and series of black points. Under surface of primaries pinkish-brown: of secondaries pale brown suffused with pinkish-brown on costal area.

Expanse 20 millim.

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One male specimen from Ichang, taken in June.
*Habitat.* CENTRAL CHINA.

### Genus EUBLEMMA.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 338 (1894).

#### 1141. *Eublemma amasina.*

*Anthophila amasina*, Eversm., Bull. Mosc., 1842, iii, p. 555.
*Anthophila paradisea*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 199 (1878); Ill. Typ. Lep. Het., ii, pl. xxxi, fig. 4 (1878).

A series from Tokio and Nikko in Pryer's collection. I received two specimens from Chang-yang, one taken in May, the other in August.

Staudinger states that Amurland specimens agree exactly with examples from Russia and Central Asia.

*Distribution.* JAPAN; CENTRAL CHINA; AMURLAND; CENTRAL ASIA.

#### 1142. *Eublemma hemirhoda.*

*Micra hemirhoda*, Walk., Cat. Lep. Het., Suppl., iii, p. 799 (1865).
*Anthophila roseifascia*, Walk., *l. c.*, p. 803.
*Anthophila hæmorrhoida*, Moore, Proc. Zool. Soc. Lond., 1867, p. 61.
*Thalpochares adulans*, Feld., Reise. Nov., pl. cviii, fig. 11 (1864–1875).
*Eublemma hemirhoda*, Hampson, Fauna Brit. Ind., Moths, ii, p. 342.

Pryer had one example from Nikko. I have also specimens from Ichang, Ship-y-Shan, and Chang-yang; those from the latter locality were taken in May, and the others in August and September.

*Distribution.* GANJAM; CEYLON; JAVA; NEW GUINEA (*Hampson*); JAPAN; CENTRAL CHINA.

### Genus PSEUDOMICRA.

Butler, Entom., xxv, p. 91 (1892).

#### 1143. *Pseudomicra semipurpurea.*

*Anthophila semipurpurea*, Walk., Cat. Lep. Het., Suppl., iii, p. 803 (1865).

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*Rhodaria amata*, Butl., Ill. Typ. Lep. Het., iii, p. 72, pl. lvii, fig. 11 (1879).

One example from Yokohama in Pryer's collection; I obtained the species at Nagasaki in June, and at Gensan in July.

*Distribution.* JAPAN; KIUSHIU and COREA.

### Genus ZAGIRA.

Walker, Cat. Lep. Het., xxxv, p. 1637 (1866).

#### 1144. *Zagira divisa.*

*Selenis divisa*, Walk., Trans. Ent. Soc. Lond., (3) i, p. 107 (1862–64).

*Mestleta divisa*, Moore, Lep. Ceyl., iii, p. 210, pl. clxxiv, fig. 7 (1885).

*Selenis semilux*, Walk., Cat. Lep. Het., xxxiii, p. 1069 (1865).

*Selenis lauta*, Butl., Ill. Typ. Lep. Het., ii, p. 44, pl. xxxiv, fig. 1 (1878).

*Zagira divisa*, Hampson, Fauna Brit. Ind., Moths, ii, p. 345 (1894).

I received one example from Hakone, taken in August, and my native collector captured two specimens in the island of Kiushiu.

*Distribution.* Throughout INDIA and CEYLON; CHINA (*Hampson*); JAPAN; KIUSHIU.

### Genus CORGATHA.

Walk., Cat. Lep. Het., xvi, p. 215 (1858).

#### 1145. *Corgatha mira.*

*Selenis mira*, Butl., Ill. Typ. Lep. Het., iii, p. 29, pl. xlvii, fig. 6 (1879).

The type was from Hakodate.

One specimen in Pryer's collection without name or locality.

"*Curvatula*" *pallicostata*, Staud., from Amurland (Rom. sur Lép., vi, p. 601), appears to be very close to this species, and may indeed be identical with it.

*Habitat.* JAPAN and YESSO.



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# III. *Undescribed Genera and Species belonging to the Rhynchotal Family* Pentatomidæ. By W. L. Distant.

[Read March 7th, 1900.]

## Plate II.

With three exceptions the type specimens of all the genera and species here described are to be found in the British Museum; and with two exceptions they are all represented in that collection. Much—perhaps overmuch—is often said as to the number of genera proposed in the Family Pentatomidæ, but this opinion usually subsides when a knowledge of that family *as a whole* is acquired. Compared with any well-worked group of other insects—such as the Longicornia in Coleoptera, the generic subdivision will not be found excessive.

## PENTATOMIDÆ.

### Subfamily *DISCOCEPHALINÆ*.

### Trincavellius, gen. nov.

Body broad, ovate, more than half as broad as long. Head large, broad, rounded in front, very distinctly and bluntly toothed in front of eyes, beyond which it is moderately concavely sinuate; lobes about equal in length. Rostrum reaching the basal segment of the abdomen, second joint longest. Antennæ five-jointed, first joint short—not nearly reaching apex of head, second a little longer or subequal in length to third, fifth short slightly incrassated. Pronotum much wider than broad, the lateral areas laminately developed, their margins rounded and somewhat erosed, posterior margin truncate at base of scutellum. Scutellum long, reaching the base of the last abdominal segment, subtriangular, moderately gibbous at base, the apex truncate. Corium broad, the lateral margin convexly rounded, distinctly but obtusely angulated a little beyond base; apical margin rounded; membrane very small, not reaching apex of abdomen.

This genus, which to my knowledge has no special affinity with any other, I have placed near *Discocephala*.



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*Trincavellius galapagoënsis.* (Plate II, fig. 1.)

*Sciocoris galapagoënsis.* Butl., Proc. Zool. Soc., 1877, p. 88, n. 1.

*Habitat.* GALAPAGOS ISLES, Charles Island (W. E. Cookson—Brit. Mus.).

Subfamily *PENTATOMINÆ.*

HALYABBAS, gen. nov.

Body ovate, narrowing to apex, depressed towards head from near base of pronotum. Head large, triangular, almost in a line with the lateral margins of the pronotum, lateral lobes very broad at base, narrowing to apex and meeting a little in front of central lobe; ocelli almost as far from each other as from eyes; rostrum reaching base of abdomen, second joint a little shorter in length than the third; antennæ five-jointed, first joint not nearly reaching the apex of head, second joint a little the longest; third, fourth and fifth subequal in length. Pronotum about twice wider than long, lateral margins obliquely straight, very slightly crenulate near eyes, posterior angles obtusely subprominent, posterior margin truncate. Scutellum broad at base, somewhat suddenly narrowed at about one-third before apex, which is rounded and reaches base of membrane. Corium with the lateral margins obliquely convex, the apical margins convexly rounded. Membrane with numerous longitudinal veins.

This genus, by the shape and size of the head, may be placed in the vicinity of *Menestheus.*

*Halyabbas unicolor*, sp. n. (Plate II, fig. 2.)

Greenish or ochraceous; thickly punctate above, most finely so on corium; antennæ, legs, and rostrum greenish-ochraceous, stigmatal spots black. Sternum coarsely punctate; abdomen very finely punctate.

Long. 16–17 millim. Exp. pronot. ang. 9–10 millim.

*Habitat.* LOMBOK (Everett—Brit. Mus.); SIAM (Brit. Mus.).

DORPIUS, gen. nov.

Body elongate, subovate, underneath moderately convex. Head ovate, lateral margins laminate, slightly recurved upwardly, lateral lobes a little longer than the central. Rostrum reaching the intermediate coxæ. Antennæ with the third joint very short, not much more than half the length of second joint. Pronotum with the lateral margins convexly laminate, slightly recurved upwardly,

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anterior angles acute. Other characters as in *Dymantis*, to which the genus is allied.

This genus is proposed for the reception of two closely-allied species, one belonging to the Ethiopian and the other to the Oriental Region.

*Dorpius typicus*, sp. n. (Plate II, fig. 3.)

Ochraceous, very coarsely and darkly punctate; a central linear fascia to head, lateral margins to pronotum, basal lateral margins to corium, four transverse spots on anterior disk of pronotum and three longitudinal fasciæ to scutellum—one central and two lateral—paler in hue. Membrane pale greyish-brown, minutely speckled with darker brown. Corium with a somewhat indistinct discal longitudinal fascia of dark punctures. Body beneath and legs a little paler than above. Antennæ with the first, second, and third joints ochraceous, fourth and fifth fuscous with their bases narrowly ochraceous. First and third joints of the antennæ subequal in length, fourth and fifth joints longest and subequal.

Long. 12 millim.

*Habitat.* CONGO (Coll. Dist.).

*Dorpius indicus*, sp. n. (Plate II, fig. 4.)

Very closely allied to the preceding—African species—but smaller, scutellum more narrowed posteriorly, colour paler, the punctuation being much less dark. Antennæ both in colour and relative length of joints same as in *D. typicus*.

Long. 10 millim.

*Habitat.* INDIA, Punjab (Lt. C. Harford — Brit. Mus.), Sind (Coll. Dist.).

Beyond the difference in the shape of the scutellum combined with the more ephemeral characters of smaller size and paler coloration, this species does not differ from the African type of the genus.

*Ochrophara montana*, sp. n.

Ochraceous, somewhat thickly and more darkly punctate; lateral margins of the corium, apex of scutellum and a faint or broken central fascia to same, body beneath, legs, rostrum, and antennæ pale ochraceous; fourth and fifth joints of antennæ reddish-ochraceous.

Body elongate; second joint of antennæ shorter than the third, third and fifth subequal in length, fourth a little longest. Lateral

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lobes of the head coarsely punctate, central lobe more sparingly punctate, a space before the eyes and at base, levigate. Pronotum coarsely but somewhat sparingly punctate, with a narrow central levigate impression, posterior angles obtusely subprominent. Scutellum with a small slightly-raised levigate callosity near each basal angle; basal area somewhat transversely rugulose. Membrane gale greyish.

Long. 12–13 millim. Exp. pronot. ang. 5½ millim.

*Habitat.* INDIA, Naga Hills (Chennell—Coll. Dist.); BURMA, Tavoy (Coll. Dist.), Karen Hills (Doherty—Coll. Dist.). Specimen without locality (Brit. Mus.).

A species slightly aberrant from the usual form of the genus, by its elongate body, the central lobe about reaching the apex of the head, and the more slender scutellum. In other respects it conforms to *Ochrophara*, the type of which I have, by the courtesy of Dr. Aurivillius, been able to examine. This species, however, is of the most extraordinary variability, not only as regards markings, which are not abnormal, but exhibiting a plastic mobility in structure which is very unusual. In a series collected for me by Mr. Doherty on the Karen Hills there is a specimen in which the anterior apices of the posterior pronotal angles are produced in acute spines directed forwardly and somewhat upwardly. This might be taken to denote a distinct species did not the series contain three specimens in which this spine is developed on *one side of the pronotum only*—left side in two specimens, and right side in the third.

In most of the Karen Hills' specimens the colour is a little more pronounced than in those from the Naga Hills and Tavoy; in particular the dark punctuation on the scutellum is accentuated, especially at base and on each side a little before apex.

### PARODIUS, gen. nov.

Head about as broad as long; lateral margins distinctly sinuate, lateral lobes a little longer than the central but not meeting in front, broad, subfoliaceous, their margins upwardly recurved; antennæ finely hirsute with the second joint a little longer or subequal in length to the third, fourth joint longest, basal joint almost reaching apex of head. Pronotum with the anterior angles toothed, the lateral margins obliquely subtruncate, posterior angles

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subprominent. Scutellum moderately broad, the apex rounded. Corium with the lateral margins convex; membrane with a few strong longitudinal veins, transverse veins few or absent. Pro- and mesosternum moderately centrally lineately carinated. Rostrum almost reaching the posterior coxæ, second joint longest.

I have placed this genus near *Odius*, Stål, which it resembles in the shape of the pronotum and other characters; it differs from that genus by the less elongate body, broader head and scutellum, etc.

*Parodius typicus*, sp. n. (Plate II, fig. 5.)

Ochraceous, thickly and darkly punctate, the punctures most numerous on the head and pronotum, and scarcer on the scutellum and corium; scutellum with the base and a central fascia distinctly paler and less punctate. Connexivum ochraceous, darkly punctate, more or less marked with piceous at the abdominal segmental angles. Body beneath and legs ochraceous, sparingly and darkly punctate, central spots to pro-, meso-, and metasternum, a large central spot to abdomen which is broad at base and narrowed to apical segment, and a subannulation to femora near their apices, piceous.

Antennæ ochraceous, second joint a little longer than the third, fourth joint longer than fifth, both joints darker and with their bases paler.

Long. 10 millim. Exp. pronot. ang. 5½ millim. Max. lat. abd. 6½ millim.

*Habitat.* PHILIPPINE ISLANDS, Isabella, North Luzon (Brit. Mus.).

*Parodius mouhoti*, sp. n. (Plate II, fig. 6.)

Ochraceous, very thickly and darkly punctate; extreme anterior and posterior angles of pronotum, and the apex of the scutellum pale ochraceous. Body beneath piceous; legs, rostrum, apical margin of head beneath, and antennæ ochraceous; abdomen above piceous, the apical segment ochraceous, punctured and tinged with piceous. Antennæ ochraceous, second and third joints subequal in length, fourth joint longer than fifth, fifth joint with its apical half infuscated.

Long. 10½ millim. Exp. pronot. ang. 5½ millim. Max. lat. abd. 6½ millim.

*Habitat.* CAMBODIA (Mouhot—Brit. Mus.).

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*Tropicorypha signata*, sp. n.

Ochraceous, somewhat sparsely but coarsely and darkly punctate; eyes, two small central discal spots to pronotum, a spot in each basal angle of the scutellum, basal lateral margins of corium, and the apical margins and apex of the scutellum, piceous; connexivum brownish-ochraceous, immaculate, but coarsely punctate. Body beneath and legs ochraceous; sternum and head coarsely and darkly punctate, abdomen darkly punctate at base, and with a lateral fascia of dark punctures on each disk; spiracles black. Rostrum reaching posterior coxæ, its apex black.

Antennæ with the basal joint reaching apex of head (remaining joints mutilated). Abdomen extending beyond the corium from about half its length to apex; connexivum slightly recurved; corium with the claval margin and a submarginal discal line, levigate.

Long. 14 millim. Exp. pronot. ang. 7½ millim.

*Habitat.* SOUTH AFRICA (*sic*) (Brit. Mus.).

*Tolumnia immaculata*, sp. n.

Brassy-ferruginous, thickly and coarsely punctate; body beneath and legs ochraceous, coarsely and darkly punctate, a large central piceous spot to mesosternum, and a very dark castaneous broad irregular central fascia to abdomen; legs punctured with brownish, femora with two larger brownish spots beneath a little before apex. Antennæ ochraceous, fourth and fifth joints and the apex of the third piceous, bases of fourth and fifth joints ochraceous.

Head long and narrow; second joint of antennæ a little longer than the third, fourth and fifth subequal in length.

Var.—Colour above ochraceous; the head, anterior area of pronotum, and sometimes apex of scutellum only, brassy-ferruginous.

Long. 8½–10 millim. Exp. pronot. ang. 5–5½ millim.

*Habitat.* CEYLON (E. E. Green—Brit. Mus.; G. Lewis—Coll. Dist.); INDIA, Nilgiri Hills (Sir G. F. Hampson—Coll. Dist.), Kotagira (Atkinson Coll.—Brit. Mus.).

This species is allied to *T. latipes*, Dall., and is separated by its narrower and more attenuated head; the absence of spots to the scutellum and the fasciate abdomen beneath also serve to distinguish it.

*Caura polluta*, sp. n.

Above dark olivaceous-green; lateral margins of pronotum, anterior-lateral margins of corium, connexivum, and apex of scutellum, sanguineous. Body beneath ochraceous; a double row of

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spots on each lateral area of sternum, abdominal incisures, and transverse elongate stigmatal spots, black. Legs and rostrum reddish-ochraceous, apex of rostrum black. Antennæ with the first and second joints reddish-ochraceous, third and fourth joints piceous—the base of the third joint reddish-ochraceous, fifth joint piceous with its basal half ochraceous. Membrane browny-black.

Second joint of antennæ much shorter than third; head with the margins of the central lobe deeply depressed and piceous. Above coarsely punctate and subrugulose, apex of scutellum finely and obscurely punctate; pronotum with two linear rows of black punctures near anterior margin.

Long. 13 millim. Exp. pronot. ang. 8 millim.

*Habitat.* ANGOLA (Brit. Mus.).

*Stenozygum miniatulum*, sp. n. (Plate II, fig. 7.)

Dark indigo-blue; head with a central basal spot, a transverse spot in front of eyes, and a frontal elongate spot on each lateral lobe, ochraceous; pronotum with the anterior margin and the posterior margins of the humeral angles—narrowly—the lateral margins, a broad central longitudinal fascia, and a small transverse spot on disk—sometimes absent—ochraceous, the anterior half of the central fascia and the lateral margins tinged with reddish; scutellum with a large reddish-ochraceous spot near each basal angle, and with a central longitudinal ochraceous fascia which broadens into a large quadrate spot before apex and then lineately continued to apex which is also ochraceous; corium with the basal lateral margin, an oblique spot on disk, and a large transverse spot near apex, ochraceous—the last tinged with reddish. Connexivum alternately ochraceous and black. Body beneath and legs ochraceous; tibiæ, tarsi, apices of femora, rostrum, and lateral spots to sternum and abdomen dark indigo-blue.

Body elongate, moderately compressed, pronotum and scutellum with scattered coarse punctures; corium thickly punctate; membrane a little longer than abdomen, brassy-black with its apical margin pale fuscous. Second joint of antennæ much shorter than the third, third, fourth, and fifth joints subequal in length.

Long. 7 millim. Exp. pronot. ang. 4 millim.

*Habitat.* NORTH-WEST AUSTRALIA, Cassini Island and Queen's Islet (J. J. Walker—Brit. Mus.).

*Dismegistus funebris*, sp. n. (Plate II, fig. 8.)

Black; lateral and posterior margins of pronotum, basal half of

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lateral margin to corium, lateral margins of sternum, and abdominal margins above and beneath ochraceous.

Antennæ with the second and third joints subequal in length and a little shorter than the fourth and fifth which are also subequal, fourth joint moderately incrassate. Pronotum thickly punctate, the margins more sparingly so. Scutellum thickly and finely punctate and faintly transversely wrinkled; corium thickly and more coarsely punctate.

Long. 6½ millim. Max. exp. 4 millim.

*Habitat.* EAST AFRICA, Kilimanjaro Mt., 10 to 14,000 feet (Sir H. H. Johnstone—Brit. Mus.).

Distinguished from *D. fimbriatus*, Thunb., by the different relative lengths of the second and third joints of the antennæ, the concolorous inner and apical margins to the corium, etc.

## Genus HOPLISTODERA.

*Hoplistodera recurva*, sp. n. (Plate II, fig. 9.)

Ochraceous, coarsely, sparingly, and darkly punctate. Head with some basal castaneous spots. Pronotum with two anterior discal subfoveate transverse spots, a central submarginal spot, and a spot at base of posteriorly produced angles castaneous. Scutellum paler ochraceous on basal half where there are four castaneous fasciæ, two central and one near each lateral margin. Membrane pale obscure hyaline. Body beneath ochraceous, sternum sparingly coarsely and darkly punctate; prosternum centrally castaneous, meso- and metasternum more or less suffused with castaneous; abdomen with a longitudinal fascia of dark punctures on each lateral discal area. Antennæ pale castaneous.

The pronotal posterior angles are well produced, moderately recurved with their apices acute.

Long. 8 millim. Exp. pronot. ang. 7½ millim.

*Habitat.* INDIA, Chakrata—North-West Provinces. (Anderson Coll.—Brit. Mus.).

Allied to *H. virescens*, Dall., but differing by the more laminate, recurved and acutely-spined pronotal angles, somewhat larger size, etc.

*Nezara æthiops*, sp. n.

Above purplish-black; basal lateral margin of corium and apex of scutellum paler; a small levigate greyish spot near each basal angle

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of the scutellum; connexivum pale brownish-ochraceous with the lateral posterior segmental angles black; antennæ pale greenish, the fourth and fifth joints reddish-ochraceous; abdomen beneath pale ochraceous; head beneath, sternum, legs, and sublateral margins to abdomen pale greenish; tarsi and rostrum ochraceous, rostrum streaked with piceous and its apex of the same colour.

Shape and structure of *N. chloris*, Westw. Second joint of antennæ a little the longest, third shortest, fourth and fifth joints subequal in length; body above thickly and coarsely punctate, the pronotum and scutellum rugulose; extreme basal lateral margin of corium and apical margin of scutellum impunctate; a small but distinct levigate nodule near each posterior angle of pronotum; sternum coarsely punctate, abdomen sparsely punctate on disk, much more thickly punctate on the lateral areas.

Long. 11–12 millim. Exp. pronot. ang. 6–6½ millim.

*Habitat.* Tangan Nyasa, near Lake Tanganika (W. H. Nutt—Brit. Mus.).

*Plautia splendens*, sp. n.

Bright shining olivaceous-green; corium dark purplish with the lateral margin broadly olivaceous-green; apex of scutellum pale bluish-green; membrane bronzy, its apical margin hyaline. Body beneath and legs bright olivaceous-green; rostrum paler its apex piceous. Antennæ ochraceous, the basal joint green.

Antennæ with the second joint a little longer than the first; third, fourth, and fifth joints subequal in length. Pronotum and scutellum coarsely punctate, corium more thickly and finely punctate; apex of scutellum finely punctate.

Long. 10 millim. Exp. pronot. ang. 5½ millim.

*Habitat.* JAPAN (Brit. Mus.).

A smaller, more elongate and differently-coloured species to *P. ståli*, Scott, the other at present known species from Japan.

*Menida atkinsoni*, sp. n. (Plate II, fig. 10.)

Black; a central discal, quadrate spot to pronotum, a large oblique spot near each basal angle of scutellum, apical margin of scutellum, lateral margins—narrow—to pronotum and corium, legs, abdominal spine, and a broken lateral lineate margin to abdomen, ochraceous. Antennæ ochraceous, basal and third joints somewhat infuscated, fourth and fifth joints mutilated.

Above thickly and coarsely punctate excepting on the ochraceous markings which are almost impunctate.

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Allied to *M. varipennis*, Westw., from which it differs by the different markings, and the broader scutellum which is much less narrowed apically with its apex more broadly convex.

Long. 6 millim. Exp. pronot. ang. 4 millim.

*Habitat.* NORTH INDIA, Mungphu (Atkinson Coll.—Brit. Mus.).

*Rhynchocoris alatus*, sp. n. (Plate II, fig. 12.)

Above pale greenish, thickly and coarsely punctate. Lateral lobes of head and apical half of central lobe reddish-ochraceous; margins of posterior portion of central lobe, blackish. Antennæ with the basal joint ochraceous, black beneath, second and third joints black, —remainder mutilated. Basal lateral margins of the corium reddish-ochraceous. Connexivum ochraceous with the segmental angles black. Membrane bronzy-brown. Body beneath and legs ochraceous, with a greenish tint; tarsi fuscous.

Second joint of the antennæ distinctly shorter than the third, central lobe reaching apex of head which is rounded; lateral angles of the pronotum very strongly and robustly produced with their apices acute, the punctures on these produced angles are coarse and black. Rostrum not quite reaching the posterior coxæ, its apex black.

Long. 15 millim. Exp. pronot. ang. 13 millim.

*Habitat.* INDIA, Naga Hills (Doherty—Coll. Dist.).

This species, like *R. plagiatus* of Walk., belongs to a section of the genus in which the central lobe of the head is as long as the lateral lobes.

*Vitellus orientalis*, sp. n. (Plate II, fig. 11.)

Green or ochraceous, the latter colour probably indicating faded specimens. Abdomen above indigo-blue, connexivum ochraceous. Membrane pale fuscous but reflecting the dark colour of the abdomen beneath it. Body beneath concolorous, the segmental incisures and linear stigmatal spots usually much darker or piceous; lateral posterior segmental apices narrowly piceous. Antennæ black, the basal joint ochraceous.

Second joint of antennæ a little shorter than the third; head somewhat transversely wrinkled; pronotum coarsely punctate, the lateral angles produced into prominent robust acute spines their apices slightly recurved; scutellum and corium coarsely punctate; basal lateral margin of corium sanguineous; apical angles of sixth abdominal segment strongly spinously produced.

Long. 14–15 millim. Exp. pronot. ang. 10–12 millim.

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*Habitat.* INDIA, Utakamand (Atkinson Coll.—Brit. Mus.), Nilgiri Hills (Hampson—Coll. Dist.).

### FERNELIUS, gen. nov.

Subovate. Head broad, anteriorly rounded but cleft at apex where the central lobe is a little shorter than the lateral lobes, the margins of which are reflexed. Antennæ with the second joint shorter than the third or fourth,—fifth mutilated. Pronotum with the anterior angles dentate, the posterior angles obtusely subprominent, lateral margins oblique very slightly sinuate. Abdomen broader than the pronotum. Rostrum reaching the second abdominal segment; second joint shorter than the third.

Other characters generally as in *Agathocles*, Stål, from which it differs by the length and proportion of the joints of the rostrum; the more elongate and less apically cleft head, etc.

*Fernelius indicus*, sp. n.

Above castaneous-brown, somewhat irrorated with ochraceous, the corium with a more or less distinct small ochraceous spot on apical area, and a small spot of the same colour in each basal angle of the scutellum; abdomen above reddish-ochraceous; connexivum ochraceous spotted with black at the incisures. Body beneath and legs pale ochraceous; antennæ, tibiæ, tarsi, apices of femora, apex of rostrum, elongate spots to sternum, stigmatal spots to abdomen and elongate waved spots between same, lateral marginal spots as above, and a spot on apical segment, black.

Head and corium thickly and coarsely punctate, pronotum and scutellum more coarsely punctate and rugulose. Head with the central lobe ochraceous, the margins of the lateral lobes distinctly blackish. Anterior margin and anterior-lateral margins of the pronotum narrowly ochraceous. Antennæ with the second joint shorter than the third and fourth joints which are subequal in length.

Long. 18 millim. Exp. pronot. angl. 9 millim.

*Habitat.* INDIA, Mungphu in Sikkim; BURMA, Rangoon (Atkinson Coll.—Brit. Mus.).

### *Synonymical Notes.*

*Œnopia punctaria.*
*Pentatoma punctaria*, Stål, Eug. resa., Ins., p. 226 (1859).
*Sciocoris odiosus*, Butl., Proc. Zool. Soc., 1881, p. 86.
*Habitat.* Montevideo.

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*Antestia variegata.*

*Cimex variegatus*, Thunb., Nov. Ins. Spec., ii., p. 48, t. 2 fig. 62 (1783).

Var. *Pentatoma lineaticollis*, Stål, Öfv. Vet.-Ak. Förh 1853, p. 220, n. 11.

*Ægaleus bechuana*, Kirkaldy, Entomologist, xxxiii, p. 78 (1900).

The well-known coffee-pest of Tropical East Africa.

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## Explanation of Plate II.

[*See explanation facing the* Plate.]

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## IV. *On Pleurostict Lamellicorns from Grenada and St. Vincent (West Indies).* By GILBERT J. ARROW, F.E.S.

[Read March 7th, 1900.]

THE Beetles here described form a small part of the collection made by Mr. H. H. Smith in 1889, 1890 and 1891. The families represented are Melolonthidæ, Rutelidæ and Dynastidæ, no member of the Cetoniidæ having been found. I am not aware that any species of these families have so far been recorded from Grenada or St. Vincent, so that the present collection, although including only a small number of species, is not without interest. The total number of species discovered is seventeen, of which eight are here described as new, the rest being, with one exception (a doubtful species of *Stratægus*), more or less common Central American insects. These are widely-distributed forms which may yet prove all to occur upon the more adjacent continent of South America.

It is remarkable that of the whole seventeen species, although considerable numbers of the majority were found, only two were discovered in both the islands, showing a difference in the Lamellicorn fauna which I am not aware has been noticed in any other group. As Mr. Smith seems to have collected in both islands at all seasons of the year, this difference can hardly be due to any accidental circumstance. The island of St. Vincent has yielded the whole of the Melolonthidæ and Rutelidæ, with the exception of a single specimen representing a new species, while Grenada shows a similar preponderance in the Dynastidæ.

The whole of the insects here referred to belong to genera well-known from the American mainland, two of which have not been previously recorded from the West Indies.

### MELOLONTHIDÆ.

#### *Lachnosterna patens*, sp. n.

Crassa, obscure rufa vel nigro-rufa, pruinosa; capite lato, grosse punctato, clypeo crebrius punctato, nitido, bilobato, margine reflexo; prothorace quam elytra ad humeros angustiore, irregulariter grosse



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punctato, lateribus paulo arcuatis nec crenatis, scutello parce punctato; elytris crebre punctatis, propygidium non tegentibus, costa suturali lata et aliis indistinctis; propygidio crebre subtiliterque, pygidio multo grossius et parcius, punctato; pectore parce fulvo-villoso; tibiis anticis tridentatis; unguium omnium dente mediano, ramo superiori longitudine æquali et parallelo. Long. 22–24 mm.

♂ pygidii apice nitidiore et subtiliter ruguloso.

♀ pygidii apice late et profunde excavato.

*Habitat.* St. Vincent.

This insect closely resembles the Mexican *L. rugipennis* but differs from it by the absence of hair upon the pygidium and propygidium, by the peculiar depression upon the pygidium of the female and also by the form of the claws. An undescribed species from Trinidad in the British Museum is still more closely related and is described at the end of this paper in order that the two may be differentiated.

*L. patens* was attracted in numbers to light at night.

*L. latens*, sp. n.

Rufo-castanea, fulvo-pubescens, omnino crebre punctata; capite parvo, fusco, rugoso-punctato, fronte setoso, clypeo haud emarginato; prothorace rufo, nitido, lateribus subangulatim dilatatis; elytris vix pruinosis, cum scutello crebre punctatis, setis nonnullis longibus; pygidio triangulari, nitido, grosse punctato, setis brevibus erectis parce vestito; corpore subtus parce, pectore densius, fulvo-piloso; unguis dente cum dilatatione basali conjuncto. Long. 16–17 mm.

*Habitat.* St. Vincent.

This is apparently very similar to *Lachnosterna nitidicollis*, Bl., described from Southern Brazil, which is however according to the author somewhat sericeous and with a clothing of fine hairs upon the elytra. The insects before me are merely slightly pruinose upon the abdomen and elytra, and the hairy clothing is not perceptible upon the greater part of the elytra, although fairly thick upon the rest of the body. Had not Blanchard's species been recorded from so distant a region I should have had more hesitation in separating the present one.

A number of specimens were found beneath decaying leaves at Chateaubelais.

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*Plectris lignicola*, sp. n.

Rufo-fusca, clypeo, pedibus corporeque subtus ferrugineis, undique fulvo-setosa, supra rugoso-punctata; clypeo paulo profunde arcuato-emarginato; prothoracis lateribus post medium valde dilatatis antice angustatis, angulis acutis, posticis rotundatis; scutello æquilaterali; elytris subcostatis vix membranaceo-marginatis; tibiis anticis bidentatis, tarsorum posticorum articulo primo duobus sequentibus longitudine æquali. Long. 8–9 mm.

*Habitat.* St. Vincent.

This is a small and somewhat elongate species without a trace of metallic lustre. It was found in rotten wood.

*Plectris fungicola*, sp. n.

Fusca vel rufo-fusca, supra plus minusve metallico-nitens, undique subtiliter ruguloso-punctata, fulvo-sericea; clypeo fere nudo, grosse punctato, antice valde angustato profunde atque angulariter emarginato; prothorace nitidiore, angulis anticis fere rectis, posticis rotundatis, marginis postici medio valde lobato; scutello lato, apice obtuso; elytris subcostatis, marginibus membranaceis tenuibus; pygidio dense rugoso-punctato; antennis 10-articulatis, longis, flavis, articulis 3°–6° elongatis; tarsorum posticorum articulo primo longitudine aliquis fere æquali.

♂ pallidior, vix metallicus, plus elongatus (prothorax præcipue), antennarum clava quam articulis aliquis (primo excepto) longiore, palpis maxillaribus attenuatis, pedibus posticis longe ac dense vestitis. Long. 10–12 mm.

*Habitat.* St. Vincent.

This insect was found in fungi. It may be at once distinguished from the previous one by the broad scutellum, the deeper emargination of the clypeus, the much longer first joint of the hind tarsi, etc. It is closely related to the Amazonian *Pseudoserica longitarsis* of Bates, although differing from it in numerous points of detail.

Although congeneric with the latter, I have preferred to use the generic name *Plectris* for these two insects as, even if Bates' attempt to divide that genus should prove adequate upon consideration of the whole mass of known species, which there seems reason to doubt, his adoption of the old name *Pseudoserica* is, I believe, due to an error, for the insect which I regard as the true *Pseudoserica marmorea*, Guérin, represents a peculiar genus exhibiting none of the characteristics cited by Bates.



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These two species are the first representatives of this large group so far recorded from any of the West India Islands.

A noticeable point is the apparent rarity of the males of *Plectris*. Among ten specimens from St. Vincent there is a single male of one of the species only and a similar disproportion seems to occur in other species. The various characteristics peculiar to this sex are also remarkable. An upper surface distinctly less glossy than that of the female seems to be of general occurrence, and besides this and its more elongate form the male of *P. fungicola* is distinguished by the elongation of its maxillary palpi and the dense clothing of long hairs upon its hind tarsi. Other species show an extraordinary development of the posterior tibial spurs.

## RUTELIDÆ.

### *Anomala inconstans*, Burm.

Six specimens of this insect, which seems very liable to local variation, were found at St. Vincent. Although showing all degrees of coloration they all belong to a variety very near that mentioned by Bates from Chiriqui (Panama), having prominent costæ and narrow interstices to the elytra. They are also rather smaller than continental specimens. Examples of the same variety have been brought from the neighbouring island of Santa Lucia.

### *Chlorota tristis*, sp. n.

Ovata, nigra, capite, prothorace scutelloque paulo æneo; mandibulis valde acutis, clypeo leviter acuminato, dimidio anteriore sculpturato, fronte et scutello fere impunctatis, prothorace crebre sed subtilissime punctato, margine posteriore leviter lobato, scutello mediocre; elytris fortiter striatis, striis punctatis, interstitio primo lato, grosse punctato, marginibus posterioribus rugosis, fusco-rufis; pygidio subtiliter striolato; pectore sparse hirto, processu mesosternali brevi acuto. ♂ (pedis antici ungue diviso). Long. 25 mm.

*Habitat.* St. Vincent.

*C. tristis* is a deeply striated insect intermediate in appearance between *C. chalconota* and *C. metallica*, being of about the size and shape of the former but rather more depressed and without its thick hairy clothing. It is at once recognizable, however, by its sombre colour. It is a

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true *Chlorota* in the strict sense, exhibiting a lobed prothorax, small scutellum and slight mesosternal process. The single specimen found by Mr. Smith is the first of this genus hitherto discovered in the archipelago.

*Pelidnota velutipes*, sp. n.

Elongata, castaneo-ænea, prothoracis disco, tibiarum apicibus, abdominis lateribus pygidioque viridioribus, tarsis nigris, capite undique punctato, clypei margine leviter sinuato; prothorace disco subtiliter, lateribus fortiter, punctato, distincte marginato (marginis anterioris medio excepto), marginibus fere rectilinearibus medio angulatis; scutello vix punctato; elytris striato-punctatis, lateribus multo grossius; pygidio subtiliter striolato, nudo; pectore sparse piloso. Long. 25 mm.

♂ tibiis posterioribus compressis, intus dense erecte brunneo-pilosis, marginibus superioribus non dentatis.

*Habitat.* GRENADA, Balthazar.

A single male specimen only was found of this species, which is easily distinguishable from all others by its colour and especially by the peculiar hind tibiæ, which are no doubt characteristic of this sex only. They recall those of the male *Chalcoplethis* to which this insect otherwise shows a close relationship. They are not elongated, however, but are covered on their inner surface with a thick brush of erect hairs.

There is an allied species, apparently undescribed, from Trinidad, of which I have not seen the male, but the female has the hind legs of the normal type.

*Leucothyreus vincentiæ*, sp. n.

Fusco-cupreus, nitidus, pedibus pallidioribus, corpore subtus pygidioque lateribus albido-squamosis; capite, prothorace scutelloque distincte punctatis, elytris crebre sublineato-punctatis, punctis minutissime setiferis; pygidio grosse striolato; tibiis anticis acute tridentatis. Long. 9–11 mm.

♂ pedibus flavis, tarsis anticis valde dilatatis.

♀ latior, pedibus ferrugineis, clypeo fortius punctato.

*Habitat.* ST. VINCENT.

This insect is very near *L. guadulpiensis*, Burm., which is known to me only by description. It appears to be rather larger and the anterior tarsi are in both sexes distinctly three-toothed, nor is there any perceptible

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sexual difference in the puncturation or the minute setæ upon the elytra. The species, of which I have seen more than forty examples, is in general very constant in size, although the female is slightly larger than the male. Two male specimens, however, are considerably larger (13 millimetres) than the dimensions given above. There are perhaps other slight differences, but until these are confirmed by further specimens it seems inadvisable to regard them as specific.

*Leucothyreus vincentiæ* was found very abundantly in fungi about the month of December. In June a few specimens (males) were found beneath decaying leaves.

## DYNASTIDÆ.

### *Cyclocephala signata*, Drury.

This species, very common in Central America, ranges as far as the states on the northern border of South America. Mr. Smith's specimens which were found only in Grenada, where they flew in abundance to light, show, at least in size, the nearest affinity to those from the latter. The insect has an evident tendency to form local races and the Grenadan individuals are as a whole more marked with black than usual.

### *C. dimidiata*, Burm.

This also occurred in Grenada alone, coming in numbers to the light at night. It has hitherto only been recorded from Central America and Lower California.

### *C. vincentiæ*, sp. n.

Præcedenti valde affinis, ovata, rufo-castanea vel nigro-castanea, supra partim aut toto nigra, prothorace cum pygidio sæpe rufis elytrisque ad basin et prope margines laterales dilutius brunneis; clypeo paulo longo, trapezoidali, truncato, ad marginem excepto fortiter punctato, fronte rare punctato, prothorace nitido, subtiliter punctato; elytris sublineato-punctatis; pygidio minute granuloso; pedum anticorum tibiis fortiter tridentatis, ♂ ungue interno fortiter lobato. Long. 9–12½ mm.

*Habitat.* St. Vincent.

This insect, one of the very few members of its large genus which depart from the usual testaceous ground-colour, is evidently the representative in St. Vincent of

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the last species, *C. dimidiata*, to which it is very closely related. In structure and puncturation it is exactly similar, but the colouring, although very variable, is always entirely different to that of the older species, and the clypeus is perhaps a trifle more elongate. Although found in great abundance it does not seem to have the habit of coming to light like that insect. The apparent rarity of the male is remarkable, for of forty-three specimens which I have examined three only are males.

*Ligyrus tumulosus*, Burm.

Many specimens were found in St. Vincent. The West Indies appear to be the headquarters of this, although it also occurs upon the mainland. There are specimens in the British Museum from Porto Rico, St. Bartholomew, Nevis, Guadaloupe and Barbados. Its seeming absence from Grenada is strange in view of this wide distribution in the archipelago.

*Stratægus julianus*, Burm.

A single female was brought from Grenada which apparently belongs to this common continental species.

*Stratægus*, sp.

Two specimens, also females, from the same island belong to *S. fascinus*, Burm., or a species near it, but, with our present knowledge, the members of this genus can only with certainty be determined from male specimens.

Both these species were found in rotting wood.

*Phileurus didymus*, L.

Three specimens were found in Grenada and St. Vincent. This common insect does not appear to have been hitherto authentically recorded outside of Central America. It occurs, however, as far south as Brazil and has been brought from Dominica and Trinidad.

*P. valgus*, L.

St. Vincent and Grenada. This is a very widely-distributed species ranging from Texas to Brazil, and it is probably universal in the West Indies.

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*P. 4-tuberculatus*, Beauv.

Two specimens of this were discovered in Grenada. The species has been recorded from Cuba and a specimen in the British Museum is from San Domingo.

These three species of *Phileurus* were all attracted by light at night.

---

*Lachnosterna trinitatis*, sp. n.

Elongata, castanea, leviter pruinosa ; capite lato, crebre punctato, clypeo nitido, bilobato, margine reflexo ; prothorace parvo, punctato, lateribus arcuatis vix crenatis ; scutello parce punctato ; elytris creberrime punctatis, fere ad extremitates dilatantibus, costa suturali tenui ; propygidio crebre subtiliterque, pygidio grossissime, punctatis, hoc nitido ; pectore parce fulvo-villoso ; tibiis anticis tridentatis, unguium omnium dente mediano, ramo superiori longitudine æquali et parallelo. Long. 22 mm.

♂ pygidio obsolete longitudinaliter sulcato.

♀ pygidii apice profunde excavato, fossæ lateribus elevatis.

*Habitat.* TRINIDAD, Cronstadt.

This species is very nearly related to *L. patens* above described but is rather smaller. The elytra are more densely punctured, the sutural costæ are distinctly narrower and the rest of the elytra almost without relief. The two species are also distinguishable by the pygidium which, besides the sexual differences described, is more shining in the present insect.

APRIL 26, 1900.

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# V. *On the* Butterflies *of Bulgaria.* By Henry John Elwes, F.R.S., F.L.S., etc.

[Read April 4th, 1900.]

Plate IV.

No country in Europe has been so little explored from an entomological point of view as the great central mountain range which forms the southern frontier between East Rumelia, Bulgaria and Macedonia, and is known at its northern end in Turkish as the Rilo Dagh, or in the Sclav. languages as Rilo Planina, and farther south and east as the Rhodope Mountains, or Despoto Dagh.

As far as I know the only collector of Lepidoptera who has ever been there is Herr Josef Haberhauer, who in 1861 and 1862 collected in the Balkans, and whose collections are described by Lederer in the Wiener Monatschrift, 1863, p. 17. Haberhauer has for the last few years resided at Slivno in East Rumelia and has collected in that neighbourhood, but has published no catalogue of the Lepidoptera. He made a short trip to the Rilo Dagh about twenty-five years ago, but no account of what he collected there has been published, and he has now little recollection of what he found. Thirty years ago I made my first expedition to Bulgaria as an ornithologist, and published a catalogue of the birds of Turkey in conjunction with Mr. T. E. Buckley (Ibis, 1870, pp. 59 *et seq.*). When this year I found that Mrs. Nicholl, whose ardour in the pursuit of butterflies has been well shown by her recent journeys in Spain and Bosnia, was willing to join me I determined to revisit the country. As, however, I was unable to leave England till the middle of June, Mrs. Nicholl spent a fortnight with Herr Haberhauer at Slivno, and made a short trip to Rilo Monastir before I arrived at Sofia.* As I knew from former experience that camping out was the only way in which the higher mountains could be explored with any comfort we took tents and camp outfit from England, and though there are villages at the foot

* Mrs. Nicholl has given a good account of the journey in the Entomologist's Record for February and March 1900.



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of the mountains where food can be procured, it is a very much more agreeable way of collecting Alpine species to be on the ground than to have to ride some hours daily over bad mountain paths and to put up with the dirt and insects usually found in Bulgarian villages. We quite expected, on account of the southern latitude of these mountains, which are little north of 42°, to experience a hot and dry climate, but were surprised to find that on the north and east slopes at any rate the climate was, in the summer of 1899 at least, both cooler and more rainy than in any part of the Swiss, Italian or Austrian Alps which I have visited, and though snow lies in patches on the highest northern slopes of the mountains, whose culminating peak, Mus-alla, is a little over 9600 feet, there are no snow-fields of any extent or glaciers. The general character of the flora as well as the birds are more northern, and indicate a colder and damper climate than any mountain range so far south in Europe with which I am acquainted.

Leaving Sofia on June 21st we skirted the high Vitosch mountain, which lies just west of the town, and drove over a low pass to Samokov through a country which did not appear from an entomological point of view very attractive, the plains being cultivated and the hills overrun with sheep and pigs. At this town we found decent lodgings in an inn, and hired horses to go to Rilo Monastir, which is a large ancient monastery lying in a very beautiful wooded valley in the middle of the mountains. It can be reached in one day's hard riding from Samokov, as Mrs. Nicholl returned that way in one day, but owing to delays caused by bad roads and bad weather we were four days on the road, and found in crossing the pass, which is nearly 7000 feet high, that we were too early for most of the Alpine species.

When we got down to the monastery, however, which is at an elevation of about 4000 feet, we found a good many species of butterflies out, and I can recommend this place as a good centre for any one unprovided with tents, as it can be reached on wheels from Sofia *viâ* Dubnitza, and the monks are very hospitable. The valley is deep and heavily timbered in most parts up to about 6000 feet with pine, fir and beech, the slopes above that being grassy and running up into rocky peaks and crags which are the home of the chamois. The forests in the more inaccessible

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valleys are almost virgin, though sawmills are creeping up them wherever a road passable for pack-horses can be kept open without too much labour. Though the monastery owns large numbers of sheep and horses the mountains are not grazed nearly so hard as in most parts of Bulgaria and Turkey, and in consequence there are many good-looking collecting-places which in the Alps would swarm with butterflies.

For some reason, however, which I cannot explain, though an abnormal season may to some extent account for it, we never once either then or later found butterflies in such abundance as in many parts of the Alps, and though as our list shows a large proportion of the Alpine species are present, yet many more which should accompany them are seemingly quite wanting. Bad weather hindered our work very much, and on very few days we were able to get more than two or three hours' unbroken sunshine, whilst several days were entirely lost through heavy rain.

We had hoped to extend our trip from Rilo Monastir into Macedonia, the frontier of which is close by, and to reach the southern and presumably warmer and earlier slopes of the range; but the political aspirations of the Macedonians, which have caused considerable unrest and friction between the Turkish and Bulgarian governments on this frontier, made our application for leave to visit Macedonia useless, and after waiting a week at the monastery we went into camp on the pass between it and Samokov. Here we had two days of fine weather, and got, among other things, *Melitæa cynthia*, which here finds its southern limit. After a few days we returned to Samokov, where Herr Haberhauer, having hurt his leg, was obliged to leave us, and through the kind help of Dr. Clark and Mr. Thompson, who have a large and apparently thriving mission here, obtained the services of a young Bulgarian, Radomir Kezantchieff, as interpreter. Five miles from Samokov is a newly-established watering-place called Camkuriya, close to high mountains and good collecting-ground, and though not above 4000 feet elevation it might be made a good centre for excursions.

From here we went up into the mountains east of Mus-alla and camped near the source of the Maritza, close to the watershed, intending to travel along the frontier as far as Batak. Here we found an *Erebia* which neither

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Mrs. Nicholl nor I could name, but which appears to be most nearly allied to *E. gorgone*, a Pyrenean species not found in the Alps. We were in hopes of finding some limestone mountains in this neighbourhood, but failed to do so, granite seeming to be the principal formation in the district. From the high peaks near our camp when the clouds cleared off, which was seldom, we could see the high range of Perim Dagh in Macedonia and a large tract of mountainous country to the west and north of us, whilst the southern slopes of the Balkan range looking, as they are, lower, drier, and less wooded than Rilo Dagh, were visible to the north-east.

Bad weather dogged our steps for a whole fortnight, and though by making the most of every gleam of sunshine we gradually accumulated a fair number of Lepidoptera, yet we were quite unable to get a series of the supposed new *Erebia* or to find the female at all.

We then descended to a place called Kostenetz, where a small and very humble bathing-place is newly started, and where we got a few low-country butterflies not hitherto taken; but though Mrs. Nicholl was very unwilling to leave the district without a series including both sexes of her long-hoped-for prize, a new *Erebia*, we were at last obliged to go back to Sofia for money and supplies. Here letters arrived which obliged us to return home, and in order to see whether the Western Balkans were a promising field for future exploration we chose the road over the Ginci Pass *viâ* Berkovitza to Lom Palanka on the Danube instead of the usual route by rail to Belgrade. This is a pleasant drive of about one hundred miles, and produced eight or ten species not hitherto taken; but again we were overtaken by violent thunderstorms in the most promising part of the mountains, which here have rather the character of downs, and which extend for thirty or forty miles north of Sofia to the pass, where they fall sharply in steep beech-clad slopes to the valley of the Danube.

On descending into the great plain or rolling steppe country which lies between the Balkan and the river we found a great change in the climate and flora, for whilst the Rhodope had had too much rain the Danube Valley was nearly dried up and the harvest very scanty. We did not see any indications of a rich insect fauna in this part of the Balkan, though probably better collecting-ground may be found farther east in the neighbourhood of the

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Trojan Pass and in the Rosalita Pass north of Kalofer. As far as I can judge from what I saw and heard there is, however, no really Alpine country in the whole range of the Balkans which does not anywhere rise to above about 7000 feet.

If I am able to revisit the country I should certainly prefer the Southern Rhodope and Macedonia, including Olympus, which, as far as I know, has been explored in recent times by no entomologist, and where a number of southern and eastern species which we did not see will almost certainly be found.

There is probably no region in Europe so likely to afford novelties as this, and it would be very interesting to see how far north the species extend which were found on the northern mountains of Greece by Kruper, and which have been described by Staudinger so ably in his work on the Lepidoptera of Greece (Horæ Soc. Ent. Ross, 1870).

The catalogue of the species found by us, which follows, comprises 121, to which may be added the following 20 found in the Balkan and Bulgaria by Haberhauer, and enumerated by Lederer in Wien. Ent. Mon., vol. vii, p. 17—

*Thais polyxena.**
*Pieris brassicæ.*†
*Lycæna minima, hylas, telicanus, corydon.*†
*Thecla spini.*
*Satyrus hermione,*† *circe, briseis,*† *actæa,* var. *cordula.*
*Pararge roxelana.*
*Spilothyrus alcææ, altheæ.*
*Syricthus cynaræ, alveus, sao.*
*Hesperia lineola, acteon, comma.*†

* His Highness Prince Ferdinand of Bulgaria discovered this species at Rilo Monastir in April 1900, and has reared specimens from the egg. The larva feeds on *Aristolochia parviflora.* These specimens are much smaller and whiter in the ground colour than those from the Balkans.

† Species so marked have been taken near Sofia by Prof. Bachmetjew. Since this paper was written Prof. P. Bachmetjew has given me a short catalogue published recently by him in the Society as *Entomologica* of the Lepidoptera of Sofia and its environs. This contains 72 butterflies, of which *Thais polyxena, Pieris brassicæ, Thecla acaciæ, Lycæna corydon, Vanessa xanthomelas, V. antiopa, Satyrus hermione, S. briseis, S. arethusa, S. statilinus, Epinephile lycaon, Spilothyrus altheæ, Syricthus alveus,* and *Erynnis comma* were not taken by us.

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This makes the number at present known to occur in Bulgaria 141, as against 110 given in Staudinger's enumeration, compared with 131 known in Greece, which has been much more fully explored. The Greek species not yet found in Bulgaria are 30 in number, as follows—

*Pieris krueperi.*
*Anthocharis gruneri, damone.*
*Colias heldreichi.*
*Rhodocera rhamni, cleopatra.*
*Thecla w-album, acaciæ.*
*Polyommatus ottomanus, thetis.*
*Lycæna bœtica, balcanica, trochilus, argus.*
*Libythea celtis.*
*Charaxes jasius.*
*Vanessa egea, antiopa.*
*Danais chrysippus.*
*Erebia melas.*
*Satyrus amalthea, mamurra, arethusa,* statilinus,* fatua.*
*Epinephele ida.*
*Syrichthus proto, phlomidis.*
*Nisoniades marloyi.*
*Hesperia nostrodamus.*

Of these the greater part will certainly be found in Bulgaria, as well as about twelve which are included in the list of Roumanian butterflies given by Caradja in Iris, vol. viii, pp. 1–62, as follows—

*Colias chrysotheme.*
*Thecla betulæ, pruni.*
*Lycæna euphemus.*
*Thestor nogelii.*
*Neptis aceris.*
*Vanessa xanthomelas,* l-album.*
*Melitæa maturna, arduinna.*
*Erebia æthiops.*
*Pararge clymene.*

The total number of butterflies which have been hitherto found or which from their known distribution may be expected to occur in Bulgaria is thus as follows—

141 + about 20 of the 29 others which occur in Greece = 161 + 10 found in the Danube Valley = 171. Probably in the whole Balkan Peninsula something like

* Taken near Sofia by Prof. Bachmetjew.

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180 to 200 species will be found, which compares favourably with about 130 in Spain, 200 in Italy, including the islands and Alps, and 200 in Asia Minor. None, however, unless we treat *Erebia gorgone* var. *rhodopensis* as a species, can be considered peculiar to Bulgaria.

1. *Papilio machaon*, L.

Not uncommon up to about 4000 feet.

2. *P. podalirius*, L.

A few seen in the low country. Common at Slivno.

3. *Thais cerisyi*, B.

Mrs. Nicholl took this abundantly at Slivno in the end of May, and also saw it in the Rilska Valley on the west side of the Rilo Dagh, which is the most westerly point where it has yet been found. The Slivno specimens are larger and the females paler in colour than in Asia Minor or the Caucasus.

4. *Parnassius apollo*, L.

Appeared about the beginning of July on dry slopes at about 3000—4000 feet, but not so common as in the Alps. The specimens are not in any way remarkable for size or markings.

5. *P. mnemosyne*, L.

Common on meadows near Rilo Monastir at the end of June at about 4000 feet, but not seen in the Maritza or Airandere Valleys.

6. *Aporia cratægi*, L.

Not uncommon at 3000—4000 feet in July.

7. *Pieris rapæ*, L.

Common at 3000—4000 and seen up to above 5000 feet, and showing a great deal of variation. Some of the females might be called *mannii;* but, as far as I can judge, this form is nowhere constant, and should be looked on as an aberration rather than a variety.

8. *P. napi*, L.

Rare in the mountains, and not seen below 6000 feet.

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9. *P. ergane*, Hüb.?

Though we caught every small specimen of *rapæ* in hopes of getting this species, which is common in Montenegro and Greece, we got no specimen about which there can be no doubt. Some of the females were very near *ergane* in size, but all had the black spot on underside of the fore-wing which is wanting in *ergane* and present in *rapæ*. Mrs. Nicholl, however, got one at Slivno which I believe is *ergane*.

10. *P. daplidice*, L.

Only taken in the plains about Sofia and at Slivno.

11. *P. chloridice*, Hüb.

Local and not common at Slivno in early June.

12. *Anthocharis belia*, Esp.

Not seen in the Rilo Dagh, but taken at Slivno.

13. *A. cardamines*, L.

Nearly over when I arrived, but Mrs. Nicholl took it at Rilo and at Slivno.

14. *Leucophasia sinapis*, L.

Common at 3000—4000 feet. I believe that what I took belonged to the second generation.

15. *Colias myrmidone*, Esp., var.

We found this insect not uncommon from about 4000—5000 feet, flying on steep hillsides and in gorges, but never in the low country. It appeared at the beginning of July, so I cannot say whether there are two generations or not; but, if so, what we took was probably the first. The specimens, like those from Bosnia, average considerably larger, and are brighter in colour than those from Austria, and are fully equal in size and brighter in colour than the form found in the Southern Ural, which has been called *ermak* by Grum.

I have seen only one *myrmidone* from Hungary which could be mistaken for Bulgarian specimens. We were unable to take many females, as they were hard to catch on such steep and bush-covered ground as they

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usually frequented; but the white form was certainly more abundant than the orange, though Mrs. Nicholl found this was not the case in Bosnia, and in Austria the white female occurs as a rare aberration only. My orange female is very like that of *heldreichi* on the upper-side, but can be distinguished by the brighter colour below. *Heldreichi*, which has hitherto only been taken on the highest peaks of Veluchi, Chelmos, and Parnassus in Greece, at 7000—8000 feet, and has been treated as a var. of *aurorina*, seems to be more worthy of specific rank than many other so-called species of *Colias*.

The fact is, that in this genus, as in many others, wherever you find a butterfly restricted by geographical or physical conditions to an isolated locality, it is comparatively easy to recognize and define its distinguishing characters; but when you find a species whose greater powers of adaptation to varying conditions of food and climate enable it to exist over a wide area, then it often becomes impossible to define its local varieties. There is no evident reason why *myrmidone* should not extend its range to Greece, and we do not yet know whether *heldreichi* may not occur in the Southern Rhodope or Macedonia; but from a geographical point of view it would seem likely that *heldreichi* is more nearly allied to *myrmidone* than to *aurorina*, from which it is separated by wide areas of sea.

16. *Colias edusa*, Fabr.

Common up to about 5000—6000 feet, and always distinguishable on the wing from *myrmidone* by its paler colour.

17. *C. hyale*, L.

Not seen in the mountains, but common in the plains and at Slivno.

18. *Thecla ilicis*, Esp.

A few specimens were taken at about 4000 feet.

19. *T. quercus*, L.

Not seen in Rilo Dagh, but taken in the Balkans at the end of July.

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20. *T. rubi*, L.

Nearly over when I reached the country, but Mrs. Nicholl found it common at Slivno.

21. *Polyommatus virgaureæ*. L.

Males were abundant on the meadows in the foothills and at Rilo Monastir, but females were not yet out by the middle of July.

22. *P. thersamon*, Esp.

Found at Slivno, where it was rare, and near Sofia at 3000 feet by Mrs. Nicholl.

23. *P. dispar*, var. *rutilus*, Wernb.

Mrs. Nicholl found this in the Struma Valley near Dubnitza, on June 7th, on marshy ground.

24 *P. hippothoë*, L.

Common in mountain meadows up to 5000 feet.

25. *P. alciphron*, Rott.

Not common in the Rilo Dagh. My only fresh male is small, of a paler colour than German specimens, like those from Florence (var. *intermedia*, Stefanelli). The female, however, is quite typical.

26. *P. dorilis*, Hufn.

Not common in wet Alpine meadows at 6000—7000 feet at the end of June.

27. *P. phleas*, L.

Not common at 3000—4000 feet.

28. *Lycæna argiades*, Pall.

Taken at Sofia in June and Slivno in May.

29. *L. ægon*, S. V.

We took this sparingly in the lower parts of the mountains and up to about 5000 feet.

30. *L. zephyrus*, Friv.

A single male taken at Kostenetz, and was not recog-

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nized by me at the time on account of its small size, but can, I think, belong to no other species. Haberhauer found it rare at Slivno.

31. *L. orion*, Pall.

Not common near Rilo Monastir in June; common at Slivno.

32. *L. baton*, Berg.

Found at Slivno, but not seen in Rilo Dagh.

33. *L. astrarche*, Bgstr.

Not uncommon at 3000—4000 feet.

34. *L. anteros*, Frr.

This was a common insect in the Rilo Dagh and Balkans from 4000 to about 5000 feet. The males are easy to recognize by their brilliant colour, but the females are sometimes easily confused with those of the last species. By the end of June it was difficult to find a fresh male, but the females were in some cases still fresh in the middle of July.

35. *L. eroides*, Friv.

I first found this in a meadow near Rilo Monastir on July 3rd, where it was rare; and on July 14th near Kostenetz at about 4500 feet it was commoner on a steep hillside among bushes. The male is easy to recognize by its bright blue colour, but the female is liable to be confused with that of *icarus*. I see no reason why this should any longer be treated as a var. of *eros*, which, as far as I know, is in Europe always an Alpine insect and constantly much smaller.

*Eroides* occurs, though it has not recently been taken, in some (to me unknown) locality in Prussian Poland, and also in the Balkans and at Sarepta. I believe that Frivaldsky also took it in Crete, but it is not yet recorded from Greece or from any part of the Carpathian Mountains.

36. *L. icarus*, Rott.

Common at the foot of the mountains. I found a very small variety of which the males were worn and the

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females fresh on the northern foothills of the Balkans, and at first supposed it to be *L. candalus*, but Dr. Staudinger thinks that they are only starved specimens of *icarus*, and the great drought which prevailed in the Lower Danubian provinces during the last winter and spring would perhaps account for their uniformly stunted development.

37. *L. eumedon*, Esp.

Common at 5000—6000 feet in the beginning of July. The specimens are large, and most of them have the white streak on the hind-wing below faint or absent as in the var. *fylgia* of Spängberg. Mrs. Nicholl found both forms at Slivno.

38. *L. amanda*, Schn.

Not uncommon at 4000—5000 feet.

39. *L. escheri*, Hüb.

Rare at Rilo Monastir.

40. *L. bellargus*, Rott.

Taken at Slivno in early June, and also on the north slope of the Balkans in the end of July.

41. *L. meleager*, Esp.

Taken at Kostenetz in the foothills of the Rilo Dagh and in the Balkans at the end of July.

42. *L. admetus*, var. *ripartii*, Frr.

Taken on the Balkans, but not seen in Rilo Dagh.

43. *L. argiolus*, L.

Not uncommon in Kostenetz in the middle of July.

44. *L. sebrus*, B.

Two specimens from Rilo on July 6th at about 4000 feet.

45. *L. eyllarus*, Rott.

Taken at Slivno and near Rilo Monastir by Mrs. Nicholl, but not common.

46. *L. semiargus*, Rott.

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The commonest and indeed the only *Lycæna* at high elevations in Rilo Dagh, where it was very common at 5000—7000 feet and perhaps higher. Most, but not all, of the specimens show on the hind-wing below the reddish marginal spots which are characteristic of the var. *parnassia*, Stgr., from Greece; but that is normally a small form, and all my specimens are large. The var. *helena* is an extreme development of the same.

47. *L. alcon*, S. V.

Not uncommon at about 3500 feet near Rilo Monastir.

48. *L. iolas*, Ochs.

Common at Slivno, but not seen in Rilo Dagh.

49. *L. arion*, L.

Also common at 3000—4000 feet.

50. *Nemeobius lucina*, L.

A few, mostly worn, of the first brood were taken late in June at Rilo; others were flying in bushy ground on July 25th in the plains north of the Balkans. These must belong to a second brood, but the species in most places seems to be only single-brooded.

51. *Apatura iris*, L.

Common near Kostenetz, the males fresh out on July 14th.

52. *A. ilia*, var. *clytie*, Schiff.

We did not take this in the Rilo Dagh, but it occurs at the foot of the hills, and was very numerous on the willows by the side of the road near Sofia on July 21st. Most of the specimens were by that time much worn.

53. *Limenitis populi*, L.

Occurred near Rilo Monastir at about 3000 feet, but not abundantly.

54. *L. camilla*, Schiff.

Only once taken at Kostenetz.

55. *L. sibylla*, L.

Commoner than the last at Kostenetz.

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56. *Neptis lucilla*, F.

Also taken at Kostenetz, but not common.

57. *Vanessa c-album*, L.

Common near Kostenetz at 4000—5000 feet.

58. *V. polychloros*, L.

A single specimen near Sofia.

59. *V. urticæ*, L.

The only *Vanessa* seen in the mountains from 5000—7000 feet.

60. *V. cardui.*

Not abundant at the foot of the mountains.

61. *V. atalanta*, L.

Seen at Rilo and at the foot of the mountains.

62. *Melitæa cynthia*, Hüb.

Though this had previously been taken by Haberhauer twenty years ago, most likely in the same place where we found it, no published notice of its occurrence except in the Alps is known to me. At our camp on the pass between Samokov and Rilo Monastir, where we had almost the only fine days we experienced, a good series of both sexes was procured. The insect flies on steep slopes covered with long grass and juniper bushes at from 7000—8000 feet, and was in perfect condition during the first week in July. It flies rather rapidly and settles with its wings spread on the grass and junipers. Some larvæ were found on a coarse grass which must be its food plant, as the insects were never far from the places where this grass grew most luxuriantly. I see no difference in either sex between the Rilo and Alpine specimens, except that the fulvous band on both wings in the male above is more developed in Bulgaria, but I do not know that I could separate them if without labels.

63. *M. aurinia*, Rott.

Common at 5000—6000 feet in meadows. I do not see how it can be distinguished from the typical form, though according to Staudinger it should be the var. *provincialis.*

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64. *M. cinxia*, L.

Common near Rilo Monastir in the middle of June; the females mostly very dark in colour.

65. *M. phœbe*, Knoch.

Not uncommon near Rilo Monastir.

66. *M. trivia*, Schiff.

A large form of this, very dark in colour, was common on some flowery hillsides among rocks at 4000 feet, near Rilo Monastir, in the end of June. Some of the females were almost melanic, others quite pale. There were also some remarkable aberrations among the males, but on the average they are larger and darker than those from any other locality whence I have specimens.

67. *M. didyma*, Ochs.

Not so common as the last.

68. *M. dictynna*, Esp.

A few were taken at about 5000 feet.

69 *M. athalia*, Rott.

Common at Camkuriya near Samokov, at Rilo Monastir, and generally at the foot of the mountains. The specimens are large and dark, like the so-called var. *mehadiensis*, Gerh.

70. *M. aurelia*, Nick.

Common. Found at the same elevation as *athalia*. Some of the females are hard to distinguish from those of *athalia*.

71. *Argynnis selene*, Schiff.

Common from 5000—6000 feet in marshy Alpine meadows. The specimens we took average smaller than usual in Europe.

72. *A. euphrosyne*, L.

The commonest butterfly in the wooded part of the mountains from 4000—6000 feet, and apparently one of the earliest to appear, most of the specimens being worn

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at the end of June. Some of the females are very large, and dark in colour.

73. *A. pales*, Schiff.

Common in Alpine meadows and forest openings at 5000—6000 feet from the end of June. To my mind the variety found here, which agrees with specimens from Bosnia, is a transition form from *pales* to the variety found in the Greek mountains and figured by Staudinger in his list of the Lepidoptera of Greece (Horæ, 1870–71) as var. *græca*. Dr. Staudinger, to whom I sent a pair, says they are nearer to his var. *caucasica*, and assigns both *græca* and *caucasica* to *arsilache* rather than to *pales* on account of the black markings on the fore-wing below being well marked. But though my specimens are not so large and pale coloured as in typical var. *græca* they resemble it in having the ocelli on hind-wing below more distinct and regular than in any other form of *pales* or *arsilache*, and by this character I should know them from any central European *pales*. From the nature of their habitat I assign the form to *pales* rather than to *arsilache*, but the specific distinction of these two forms is yet unproved though very probable.

74. *A. dia*, Linn.

A few were taken at the foot of the mountains in July.

75. *A. daphne*, Schiff.

One was taken at Rilo by Mrs. Nicholl.

76. *A. ino*, Esp.

Not common near Rilo Monastir in bushy places.

77. *A. hecate*, Esp.

I took a single specimen at about 3500 feet.

78. *A. lathonia*, L.

Not uncommon.

79. *A. aglaia*, L.

Fairly common on the mountains.

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80. *A. niobe*, var. *eris*, Meig.

Common at 3000—4000 feet.

81. *A. adippe*, L.

82. *A. paphia*, L.

Taken at Kostenetz in July.

83. *A. pandora*, Schiff.

Taken at Kostenetz at 3500 feet.

84. *Melanargia galathea*, L.

Common up to about 3500 feet; also at Slivno at 1500 feet early in June.

85. *M. larissa*, Hüb.

Mrs. Nicholl found this species common at Slivno at the beginning of June. The specimens are dark, very like some from Syria, but I have none from Greece or Dalmatia for comparison.

86. *Erebia epiphron*, var. *orientalis*, n. var.?

We found this pretty common in the Rilo Dagh at from about 5000 to nearly 7000 feet in the end of June and July, in company with *æme* and *medusa*, in places where long grass grew on sunny slopes.

On comparing it with a large series of various forms of this species from the Harz, Vosges, Styria and Pyrenees, I find that it comes nearest to the Pyrenean form in size and markings, but can be separated from it as well as from all others by the following characters—In the ♂ the band of the fore-wing above is less defined and the two lower ocelli constantly absent (though I attach little importance to this, as similar specimens occur rarely in other places). In many specimens there is a distinct chocolate stripe extending inwards from the apical ocelli which is characteristic of this form, and of which a trace is seen in one other specimen only (from the Sau Alpe in Styria). In the female, however, the difference is much greater, the ocelli above being ringed with white, and the ground colour below much more like that of *æme* ♀, having the ground colour greyish, pale marginal band very distinct, and the ocelli strongly ocellated with white points in the centre.



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I have seen no similar females of *epiphron* from any place except two in Grum's collection marked "Alpes," which, if they do not come from Bulgaria, I am inclined to refer to *œme*. I caught *œme* females at the same time and place flying with their males in company with *epiphron*, and can easily distinguish them by their large size and the broader, more rounded wings, and, as I have shown below, this form of *œme* is different from the Alpine or Pyrenean one.

87, 88. *E. medusa*, F., and var. *psodea*, Hüb., and *E. œme*, Hüb. var.

Though these species were very abundant in the Rilo Dagh I have very great difficulty in deciding how to name many of the specimens, of which we took large numbers.

The form of *medusa* which Mrs. Nicholl took at Slivno in the early part of the season is a large form with large ocelli, usually five in number on the fore-wing, of which the third is the smallest, and often in the male obsolete or only represented by a point.

This form was also taken in the lower parts of the Rilo Mountains up to 4000 or 5000 feet, though not so large and well-marked as at Slivno.

It is usually known in collections as *medusa*, var. *psodea*, Hüb., or *eumenis*, Frr., and is considered by Staudinger as a form of *medusa*. It is the typical form in the Balkans in Podolia and Hungary, and occurs in the Alps and Germany as an aberration.

At a higher elevation in Rilo Dagh, up to say 7500 feet, a smaller form of *medusa* or *œme*, some of which might be called *hippomedusa*, Ochs, was common in company with a species of similar size, most like one which is common in the Alps of Styria in Bosnia and possibly elsewhere, and is known in collections as *œme*, var. *spodia*, Stgr. When taking this we could usually distinguish the males by the colour of the fore-wing below, which is tinged with the chocolate colour of the band, the lower part of which is indefinite and fades into the ground colour of the wing, whereas in *medusa* it is much more sharply defined.

The females are more easy to distinguish, as they have the same difference, and also as a rule have the ground colour of the wings more fulvous. There are some

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specimens which are difficult to distinguish without having recourse to the genitalia, which agree very well with those of *medusa* and *æme*, and seem to me to prove that the two forms are distinct species. Dr. Chapman, to whom I sent specimens of both forms, says that he is able in all cases to distinguish them by the antennæ. In *medusa* the club is yellow-brown beneath, and in *æme* the same part is black.

Probably hybrids between the two occur.

89. *E. melas*, var.

A single specimen of this species taken on Belmecan, October 8th, was sent me recently by Radomir Kezantchieff, who returned to Kostenetz after we left in hopes of getting more specimens, including the female of *E. gorgone*. As his experience may be useful to other entomologists I give an extract from his letter.

He started for Kostenetz on August 9th, two weeks after we parted, the weather being just as rainy as when we left, and stayed a week in the valley of Airandere, at the gendarmerie hut, but owing to persistent rain and mist got only a few specimens. Then he returned to Kostenetz and ascended the mountain called Belmecan, 8600 feet high, where he found a great many of what he thought to be the same as *E. gorgone*, but not having a net with him was only able to take a few with his hands. Having found a good place to collect in he returned, but bad weather again set in, and lasted two weeks. All the specimens taken on these occasions were sent to me by post, but have been lost with the exception of *E. melas*.

90. *E. lappona*, Esp.

On the bare grass-covered tops and flatter slopes of the Rilo Dagh above 7000 feet, common, but most abundant at about 8000 feet, and the only *Erebia* which was found abundantly at high levels, though *medusa* and *æme* also occurred in the lower part of its range.

The first specimens were taken at the end of June, and continued to appear till the middle of July. On the average the specimens are larger and brighter, with the inner bands on the fore-wing above and the bands of the hind-wing below more strongly marked than in specimens from the Alps.

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91. *E. tyndarus*, var.

We did not find this until the first week in July, when the males appeared at about 5000 feet in grassy places in the forest, but we got no females; whether it occurs at a higher elevation later in the season or not I cannot say, but Mrs. Nicholl got it in Bosnia at from 4000—5000 feet in the end of July, and found both typical specimens and a form which she called *balcanica* within 1000 feet of each other. Rilo specimens are considerably larger than Alpine, Pyrenean, or Asiatic examples, but not so large as var. *ottomana* from Greece and Asia Minor, and seem to form a transition to those varieties. On the underside they are like Bosnian specimens, with the bands indistinct, and often have on the hind-wing below a mixture of fulvous colour with the grey, and the ocelli well marked. I am not aware that any form of *tyndarus* has yet been taken in the Balkan Mountains.

92. *E. gorgone*, var. *rhodopensis*, n. var.

In the upper Maritza Valley on July 11th Mrs. Nicholl took the first specimen of what we supposed to be a new *Erebia*, and we afterwards found four more males in the Airandere Valley above Kostenetz. In both places they frequented wet grassy spots at about 7000 feet, among the dense scrub of *Pinus pumilio*, which grows more luxuriantly in the Rilo Dagh at 6000—8000 feet than in the Alps of Austria, and often forms an impenetrable thicket. Its habits and manner of flight were so different from that of *gorge* that we could not believe it to be a form of that species, and only after comparison of the clasps with those of *gorgone* I am obliged to consider it as a local form of that species. In size and appearance the males resemble those of *gorgone* from the Pyrenees more than *gorge*, but though we did everything in our power to get a series, the continued bad weather made it impossible, and without knowing the female I cannot say whether it has good claims to specific distinction.

Since writing the above Dr. Staudinger has lent me a pair of the same species taken by Haberhauer in Rilo Dagh (though sent as from the Balkans) many years ago. The male is exactly like ours; the female resembles that

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of *gorgone* more than that of *gorge*, but the veins below are not so white as in that species.*

93. *E. æthiops*, Esp.

We left the country before the proper season for this insect, which I did not see myself, but Mrs. Nicholl took one at Kostenec which she did not preserve.

94. *E. ligea*, L.

Common at the foot of the mountains and up to about 4000 feet in the first half of July. The specimens large, and typical *ligea*.

95. *E. euryale*, Esp.

Very abundant in the forest from about 4000 feet, where it just overlapped the range of *ligea*, up to about 7000 feet during July. There was little or no variation among them, and not the least difficulty in distinguishing them on the wing from *ligea*. As far as I can see it is only in Scandinavia, North Russia and Siberia where there is any difficulty in distinguishing *euryale* from *ligea*.

96. *Satyrus semele*, L.

Whether we were too early for this genus or whether the unusually wet season had retarded their appearance I cannot say, but up to July 20th no species of the genus had made its appearance in the Rilo Dagh; but Mrs. Nicholl caught one of this species on June 4th at Slivno.

97. *S. dryas*, Scop.

This was common on the north side of the Balkans at the end of July, but not seen in the Rilo Dagh.

98. *Pararge mæra*, L.

Common in the Rilo up to about 4000 feet. The specimens come very near, except in size, to *hiera*. When a large number of *mæra* are examined the extent of variation is astonishing, some from Sweden and Norway being hardly distinguishable from *hiera*.

* I saw a worn specimen of this species, said to have been taken somewhere in the Balkans, in the Sofia Museum in 1900.

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99. *P. egeria*, L.

Seen in the foothills, but too much worn to be worth preserving. It seemed to be the northern form.

100. *P. hiera*, F.

A very common insect in June in the Rilo Dagh at about 5000—6000 feet, and still flying, though in a very worn condition, in July. This seems to be the most southern locality in Europe where *hiera* has yet been found.

101. *P. megæra*, L.

Not common in the foothills at 3000 feet.

102. *Epinephele lycaon*, Rott.

Not common at Kostenetz, and taken in the Balkans.

103. *E. janira*, L.

Common at 3000—4000 feet in July.

104. *E. tithonus*, L.

A few seen in the Balkans in the end of July.

105. *E. hyperanthus*, L.

Appeared in July in the lower parts of the mountains.

106. *Cœnonympha leander*, Esp.

Very common early in June at Slivno and on the hills near Sofia; not so common in the Rilo Dagh up to about 4000 feet. There is considerable variation in both sexes.

107. *C. iphis*, Schiff.

Not uncommon in the foothills at 3000—4000 feet.

108. *C. arcania*, L.

With the last, and equally abundant.

109. *C. pamphilus*, L.

Not so common as the last two species in similar situations.

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110. *C. tiphon*, var. *rhodopensis*, n. var.

This butterfly was very common in Rilo Dagh from about 4000 to at least 7000 feet, and was not confined to particular habitats, though commonest on wet mountain meadows. It was out in the middle of June, and fresh specimens could be got a month later. On comparing them with my numerous specimens of *tiphon* from all parts of Europe and Asia I find that they differ from normal European specimens in having in most cases the apical band of fore-wing below obsolete, but some specimens (about one third) show a trace of this band, and some of these cannot be distinguished from two specimens of *tiphon* from Stettin, and are also very close to, but much larger and darker than, what I took in the Altai Mountains (*cf.* Trans. Ent. Soc., 1899, p. 363).

On sending a specimen of the Rilo form to Dr. Staudinger he writes as follows—"Here you have found something really interesting. This specimen agrees with four or five males that I received many years ago from Haberhauer from the Caucasus without exact habitat. I have described it as *symphita*, Led., var. *tiphonides*, and from these specimens consider *symphita* (which I received in quantity from Achalzich in Armenia) also as a probable form of *tiphon*." As to the identity of *tiphon* and *symphita* my specimens of the latter are not sufficient to enable me to judge, but certainly the Bulgarian form is, on account of the grey patch on hind-wing below, much nearer to *tiphon* than to *symphita*, which (in the specimens I have) wants this patch entirely.

111. *Spilothyrus lavateræ*, Esp.

Taken at Slivno, but not seen in Rilo Dagh.

112. *Syricthus sidæ*, Esp.

Not uncommon at Rilo at 3000—4000 feet in the end of June; and also at Slivno.

113. *S. carthami*, Hüb.

I took a single specimen only.

114. *S. serratulæ*, Rmbr.

Common in the foothills up to about 4000 feet.

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115. *S. cacaliæ*, Rmbr.

This species, which as far as I know has not been hitherto found east of the Alps, was not abundant, but fairly distributed at high elevations, 6500—8000 feet, at the end of June, and was the only *Hesperiid* at that elevation.

116. *S. malvæ*, L.

Common at 4000—6000 feet.

117. *S. orbifer*, Hüb.

Taken by Mrs. Nicholl at Slivno.

118. *Nisoniades tages*, L.

Not common in the foothills of Rilo Dagh.

119. *Hesperia thaumas*, Hüf.

With the last; not abundant.

120. *H. sylvanus*, Esp.

Not abundant, but more so than the last.

121. *Carterocephalus palæmon*, Pall.

Not uncommon in damp places in Rilo Dagh at 4000—5000 feet, and nearly over at the end of June.

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## Explanation of Plate IV.

[*See Explanation facing the* Plate.]

[Plate IV. not being ready for publication, will appear in a later Part of the Transactions.]

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# VI. *Report upon the* Aculeate Hymenoptera *of the Islands of St. Vincent and Grenada, with additions to the* Parasitic Hymenoptera *and a List of the described* Hymenoptera *of the West Indies.* By WILLIAM H. ASHMEAD, Assistant Curator U.S. National Museum.

[Read March 21st, 1900.]

## INTRODUCTION

HAVING done so much work on the Terebrant Hymenoptera of St. Vincent and Grenada, it was with considerable pleasure that I received, early in June 1897, a letter from Mr. George Murray, informing me that it was the desire of the West Indies Natural History Exploration Committee to transmit to me, to be worked up, the Aculeate Hymenoptera collected by Herbert H. Smith in these islands; that in a few days he expected to leave on an exploring expedition to the South Seas to be gone all summer, and if I could do the work to send my reply to Sir George Hampson, of the British Museum, who would see that the material was promptly forwarded.

I was, of course, very desirous of accepting this offer, and thus round off my studies on the Hymenopterous fauna of the West Indies. It was not until some time in August, however, that I saw my way clear to accept this offer, when I wrote to Sir George Hampson, my acceptance, and the material in the *Aculeata*, as well as much additional material in the *Terebrantia*, was forwarded to me at the National Museum, and the present extensive contribution is the result.

In this connection it may be well to state that I have incorporated here not only all of this new material, but also considerable material in special groups, retained from previous sendings, which the late Dr. C. V. Riley had intended to work up, namely, the *Eupelminæ*, *Agaonidæ*, species in the genus *Scelio*, and the *Microgasterinæ*, but which he was never able to even touch up to the time of the unfortunate accident that resulted in his untimely death.



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The *Aculeata* of these islands, in comparison with the large number of the *Terebrantia* taken, were decidedly disappointing, since the collection was small, and many genera and species, occurring on other islands of the West Indies, which must occur on both islands, were conspicuously absent.

The majority of the described species taken, however, appear to have a wide distribution throughout the West Indies, and many of them extend their range into Central and South America.

Our knowledge of the West Indian Hymenoptera is still too imperfect to afford a basis for a safe generalization upon their origin and distribution, and in lieu of remarks upon their distribution, I have thought it advisable to terminate this contribution with a complete list of the described Hymenoptera of the West Indies, not only as an aid to students, but to show the number of species now known from these islands and the insufficient knowledge we as yet possess of their distribution.

The arrangement of the superfamilies and families in this contribution is original with the writer, and in accordance with his views as enunciated in several recent publications.

## Suborder I. HETEROPHAGA.

### Superfamily I. *APOIDEA.*

### Family I. APIDÆ.

#### Subfamily I. *MELIPONINÆ.*

#### Genus TRIGONA, Jurine.

1. *Trigona nigrocyanea*, n. sp.

♂ Length to tip of abdomen 2·8 mm.; to tip of wings 4 mm. Blue-black, clothed with a sparse glittering white pubescence; ocelli red; tibiæ dark rufo-piceous, the tarsi paler; antennæ filiform, brown-black, the pedicel and first joint of flagellum short, wider than long, the second flagellar joint twice as long as the first, the following subequal; face and pleura closely punctate, the thorax above microscopically shagreened and also distinctly but not very closely punctate; tegulæ smooth, piceous; wings fuscous, the stigma and veins brown-black; abdomen rufous, black at base only.

St. Vincent—Leeward side. Described from one ♂ specimen.

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Subfamily II. *APINÆ.*

Genus APIS, Linné.

2. *Apis mellifica*, Linné.

Grenada—St. George's (Leeward side). Four ☿ specimens.

Family V. ANTHOPHORIDÆ.

Genus CENTRIS, Fabricius.

3. *Centris elegans*, Smith.

1874. *Centris elegans*, Smith, Ann. and Mag. Nat. Hist. (4), xiii, p. 372, ♀.
1896. Dalla Torre, Cat. Hym., x, p. 304.

St. Vincent—Windward side. Five ♀ specimens.

4. *Centris hæmorrhoidalis*, Fabricius.

1775. *Apis hæmorrhoidalis*, Fabr., Syst. Ent., p. 386.
1804. *Centris hæmorrhoidalis*, Fabr., Syst. Piez., p. 359.
1841. Lepel., Hist. Nat. Ins. Hym., ii, p. 155.
1896. Dalla Torre, Cat. Hym., x, p. 305.

Grenada—Windward side. Eighteen specimens, ♂ and ♀.

5. *Centris versicolor*, Fabricius.

1775. *Apis versicolor*, Fabr., Syst. Ent., p. 386.
1804. *Centris versicolor*, Fabr., Syst. Piez., p. 359.

Grenada—St. George's (Leeward side); St. Vincent. Twenty-seven specimens.

6. *Centris apicalis*, Smith.

1874. *Centris apicalis*, Smith, Ann. and Mag. Nat. Hist. (4), xiii, p. 367.
1896. Dalla Torre, Cat. Hym., x, p. 302.

St. Vincent. Four specimens.

7. *Centris xylocopoides*, Fox.

1899. *Centris xylocopoides*, Fox, Proc. Phil. Acad. Sciences, 1899, p. 70.

Grenada. Four ♀ and six ♂ specimens.

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## Genus MELISSODES, Latreille.

### 8. *Melissodes trifasciatella*, n. sp.

♀. Length 8–9 mm. Black; head and thorax with black pubescence, the face and labrum with sparse white hairs, the temples and cheeks with a rather dense whitish pubescence; prothoracic tubercles fringed with white hairs; mesopleura sparsely, the metathorax, especially laterally and the basal segment of abdomen, clothed with a whitish or griseous pubescence; abdominal segments 2, 3, and 4, with a narrow transverse median fascia of appressed white hairs (sometimes indistinct or wanting); anterior and middle tarsi beneath, and the hind tibiæ and tarsi, with a dense ferruginous scopa; all tarsi except basal joint above, and the tibial spurs, ferruginous; flagellum brownish beneath; wings subfuscous, the veins brown-black, the stigma ferruginous.

St. Vincent—Kingstown. Described from six ♀ specimens, of which four specimens, probably rubbed, have only slight indications of the fasciæ on the abdomen.

### 9. *Melissodes mimica*, Cresson.

1869. *Melissodes mimica*, Cress., Tr. Am. Ent., ii, p. 288, ♂.
1896. *Eucera mimica*, Dalla Torre, Cat. Hym., x, p. 240.

Grenada—St. George's (Leeward side), St. John's River; St. Vincent. Thirteen ♀ and 31 ♂ specimens.

## Genus EXOMALOPSIS, Spinola.

### 10. *Exomalopsis rufitarsis*, Smith.

1879. *Exomalopsis rufitarsis*, Smith, Descrip. New Sp. Hym., p. 126, ♀.
1896. Dalla Torre, Cat. Hym., x, p. 299.

St. Vincent. Many specimens.

### 11. *Exomalopsis pubescens*, Cresson.

1865. *Exomalopsis pubescens*, Cress., Proc. Ent. Soc. Phil., iv, p. 192, ♂.
1896. Dalla Torre, Cat. Hym., x, p. 299.

St. Vincent, 500 feet; Grenada (Windward side)—Balthazar. Eight specimens, two ♂ and six ♀.

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## Family VI. NOMADIDÆ.

### Genus EPEOLUS, Latreille.

#### 12. *Epeolus rufotegularis*, n. sp.

♀. Length 9–9·5 mm. Black, the head and thorax closely punctate. Scape and pedicel beneath, the mandibles, the prothoracic tubercles, and the legs, except at base, rufous. Wings hyaline, broadly margined with fuscous at apex. Face, temples, hind margin of prothorax, two abbreviated lines on mesonotum anteriorly, a line on scutellum at base and at apex, mesopleura superiorly, metathoracic angles, ventral segments 2–3 at apex, and dorsal segments 1–4 at apex, but broadly interrupted medially, besides two spots at base of first dorsal segment and two spots on apical segment, with an appressed whitish pubescence.

Grenada—St. George's (Leeward side); and Canonan Isle, Grenadine. Described from eight ♀ specimens.

This species is evidently allied to *E. vicinus*, Cress., described from Cuba, but differs decidedly in having the face and labrum black, the different coloured pubescence, and by the dorsal abdominal fasciæ being all widely interrupted at the middle.

### Genus MELISSA, Smith.

#### 13. *Melissa imperialis*, n. sp.

♀. Length 12–13 mm. Head and thorax black, clothed with a velvety black pubescence, the face and thorax above, in certain lights, with a decided bluish-green tinge. Abdomen and legs blue-green. Mandibles rufous, piceous at apex. Ocelli red. Anterior orbits, the clypeus at the sides and hind orbits usually, with a fringe of glittering white hairs. The middle trochanters behind and sometimes the hind trochanters are narrowly margined with yellow at apex; tarsal joints 2–4 in certain lights, show a piceous or rufo-piceous tinge; the middle tibial spur is rufous, long and forked, the anterior fork being serrated; the first joint of the middle tarsi has its apical hind angle produced into a spine; while the hind tibial spurs are finely serrate within. Wings hyaline, the anterior pair with a smoky cloud at apex; stigma and veins black or piceous black.

The ♂ agrees fairly well with the ♀, except that the clypeus is covered with a *golden* pubescence and there is a triangular tuft of *golden* pubescence on the inner orbits just above the antennæ, while the hind femora are produced into a triangular lobe at base beneath. Three

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specimens also exhibit a narrow streak of grayish pubescence on the lateral margins of the mesonotum, close to the tegulæ, and also on the scutellum posteriorly.

St. Vincent. Described from six ♀ and four ♂ specimens.

Comes evidently nearest to *M.* (*Hoplophora*) *velutina*, Lepel.

## Family VII. CERATINIDÆ.

### Genus CERATINA, Latreille.

#### 14. *Ceratina nigrita*, n. sp.

♀, ♂. Length 3–3.5 mm. Black, shining; apex of abdominal segments sometimes dorsally and ventrally dull testaceous; a short, narrow line on inner orbits, opposite the insertion of the antennæ (but sometimes wanting), a pyramidal or triangular median spot on the clypeus, a spot on middle of labrum and the tubercles, white. The anterior coxæ are strongly produced laterally into a blunt angle or tooth; the tip of the anterior femora, their tibiæ and tarsi, and the last three joints of the middle and hind tarsi are yellowish or pale ferruginous; while the anterior tibiæ have a white line in front. Wings hyaline or rarely with a slight fuscous tinge, the stigma and veins brown-black.

The head, except the superior edge of the occiput, is smooth and shining, impunctate. Mesonotum polished, impunctate, except the hind margin just in front of the scutellum, where it is confluently punctate. Scutellum is shining but punctate. Postscutellum opaque, closely, minutely punctate. Mesopleura sparsely but distinctly punctate. Metathorax with its posterior face smooth and shining.

The ♂ differs from the ♀ in having a hat-shaped white spot anteriorly and a white dot or line on the inner orbits anteriorly, between the clypeus and the eye; otherwise it is scarcely distinguishable from the ♀.

St. Vincent. Described from eleven specimens, representing both sexes.

## Family VIII. XYLOCOPIDÆ.

### Genus XYLOCOPA, Latreille.

#### 15. *Xylocopa morio*, Fabricius.

1793. *Apis morio*, Fabr., Syst. Ent., ii, p. 315.
1804. *Xylocopa morio*, Fabr., Syst. Piez., p. 338.
1874. Smith, Tr. Ent. Soc. Lond., 1874, p. 285, ♀.

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St. Vincent—Windward side; Grenada—Windward side.

This common West Indian species is represented by fifteen ♀ and five ♂ specimens.

## Family IX. MEGACHILIDÆ.

### Subfamily II. *MEGACHILINÆ.*

### Genus MEGACHILE, Latreille.

#### 16. *Megachile martindalei*, Fox.

1891. *Megachile martindalei*, Fox, Tr. Am. Ent. Soc., xviii, p. 344, ♀ ♂.
1896. Dalla Torre, Cat. Hym., x, p. 438.

St. Vincent. Two ♀ and one ♂ specimen.

Dr. von Dalla Torre, in his 'Cat. Hym.' has incorrectly recorded this species from Indiana. The type is now in the U.S. National Museum (Fox Collection) and was described from Jamaica, W. I.

#### 17. *Megachile flavitarsata*, Smith.

1853. *Megachile flavitarsata*, Smith, Cat. Hym. B. M., i, p. 430.
1896. Dalla Torre, Cat. Hym., x, p. 130.

St. Vincent—Windward side; Grenada—St. George's (Windward side). Four ♂ specimens.

#### 18. *Megachile tridentata*, n. sp.

♂. Length 9 mm. Stature and pubescence as in *M. poeyi*, Guérin, but differs as follows: legs wholly black, the basal half of the claws rufous; anterior tarsi not dilated but the basal joint with a long hair-fringe behind. Flagellum wholly black. Pygidial ridge produced into a small triangular tooth, the basal ridge very broadly, semicircularly emarginate, leaving two widely separated teeth. Tegulæ ferruginous. Wings subhyaline, the stigma and nervures brown-black.

St. Vincent (?), No. 106.

Described from a single ♂ specimen. The specimen is without a printed St. Vincent label, and I am uncertain whether it was taken on this island or on Grenada.

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### 19. *Megachile minima*, n. sp.

♂. Length 6–6·5 mm. Black; face and cheeks clothed with a dense, whitish pubescence (in one specimen yellowish), the pubescence on the clypeus with some black hairs interspersed through the white; vertex with long black hairs. Ocelli pale. Pronotum at sides, mesopleura, angles of metathorax and the anterior coxæ and femora beneath with a white pubescence. Legs black, with glittering white hairs, interspersed with a few black hairs. All tibial spurs and the basal half of the claws, yellowish. Thorax with some black hairs above. Abdomen short, subglobose, the ventral segments narrowly fringed with white hairs; dorsal segments 1–5 narrowly fringed with white hairs and usually, except the fifth, broadly interrupted medially. Antennæ long, extending to base of abdomen, black. Head and thorax closely punctate. Tegulæ rufo-piceous. Wings subhyaline, the stigma rufous, the veins piceous. Abdomen distinctly, but not thickly, punctate, the dorsal segments 1–3 depressed at apex, the depressed portion on the second and third, finely shagreened; pygidium with a reflexed rim at apex.

St. Vincent. Described from five ♂ specimens.

### 20. *Megachile binotata*, Guérin.

1845. *Megachile binotata*, Guérin, Iconog. règn. anim., Ins., p. 450.
1896. Dalla Torre, Cat. Hym., x, p. 422.

♀. Length 12–12·5 mm. Black, with a black pubescence, the ventral scopa black; face, except clypeus medially and anteriorily, temples and the basal segment at the lateral apical angles, clothed with a pure white pubescence; dorsal abdominal segments 2–4 very narrowly fasciate with white pubescence. Head and thorax finely, closely punctate. Mandibles strong, 4-dentate within. Antennæ rather short, black, extending to tegulæ, the flagellum brownish beneath. Tegulæ black. Wings fusco-hyaline, the stigma and veins piceous. Tibial spurs and claws, except tips, honey-yellow. Abdomen, except the last segment, almost smooth, sparsely punctate.

Grenada—St. George's (Leeward side); St. Vincent; and Grenadines — Canonan. Described from nine ♀ specimens.

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## Family X. STELIDIDÆ.

### Subfamily II. *CŒLIOXINÆ.*

### Genus CŒLIOXYS, Latreille.

21. *Cœlioxys abdominalis*, Guérin.

1845. *Cœlioxys abdominalis*, Guérin, Iconogr. règn. anim., Ins., p. 453, ♀.
1850. Lucas, in La Sagra's Hist. fis. Cuba, vii, p. 779, tab. 19, f. 11.
1864. Cresson, Proc. Ent. Soc. Phil., ii, p. 408.
1881. Dewitz, Berl. Ent. Zeitschr., xxv, p. 199.
1896. Dalla Torre, Cat. Hym., x, p. 480.

Grenada—St. George's (Leeward side); Grenadines—Canonan. Five ♀ and three ♂ specimens.

## Family XI. PANURGIDÆ.

### Genus DUFOUREA, Lepeletier.

22. *Dufourea subcyanea*, n. sp.

♂. Length 4.5 mm. Dark blue, with a sparse, pale pubescence, the head and thorax distinctly punctate. Abdomen smooth, shining, at most with some microscopic punctures. Ocelli red. Scape black, the flagellum brown-black, along the sides and beneath paler. Legs black, the tibiæ brown-black, the tarsi ferruginous. Wings subhyaline, the stigma and veins brown. Tegulæ dark rufo-piceous. Metathorax with a semicircular enclosure at base, the surface of same roughened from elevated lines.

St. Vincent. Described from one ♂ specimen.

### Genus HYLÆOSOMA, Ashmead.

1898. *Hylæosoma*, Ashm., Psyche, viii, p. 376.

23. *Hylæosoma longiceps*, n. sp.

♀ ♂. Length 3·5–4·5 mm. Æneous black, sparsely clothed with a pale pubescence. Head and thorax sparsely but distinctly punctate. Antennæ inserted a little above the middle of the face, black, the flagellum strongly clavate, brownish beneath. Head elongate, seen from in front fully twice as long as wide, the eyes very long and submarginate within, opposite the insertion of the antennæ. Ocelli pale,



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subtriangularly arranged. Pronotum transverse, a little narrowed anteriorly, with a deep transverse impression above anteriorly. Mesonotum about as long as wide with a poorly impressed central longitudinal line, the lateral impressed lines also indistinct and abbreviated. Scutellum subconvex, with a transverse impressed, but not sharply defined, line at base. Metathorax as long as, or a little longer than, the scutellum and postscutellum united, with a well-defined triangular area at base, the surface of same being finely rugulose with an elevated longitudinal line down the centre. Wings almost hyaline, the large stigma and veins brown or brown-black; tegulæ rufo-piceous; second cubital cell small, almost quadrate, less than half the length of the first; submedian cell considerably shorter than the median. Legs black, the knees, the anterior tibiæ beneath and the tarsi ferruginous, the hind tarsi dusky; claws cleft. Abdomen elongate, longer than the head and thorax united, the dorsal segments, apically towards the sides, clothed with narrow dense whitish pubescence (sometimes complete in ♂).

The ♂ agrees with the ♀ except the antennæ are longer, subfiliform, while the labrum, mandibles, mouth-parts, prothoracic scale, trochanters, knees, base and tips of the tibiæ, and the tarsi, are ferruginous.

St. Vincent—Leeward and Windward sides; Kingstown. Described from four ♀ and four ♂ specimens.

## Family XII. ANDRENIDÆ.

### Subfamily II. *HALICTINÆ.*

### Genus AUGOCHLORA, Smith.

#### 24. *Augochlora regina*, Smith.

1853. *Augochlora regina*, Smith, Cat. Hym. B. M., i, p. 77, ♀.
1865. Cresson, Proc. Ent. Soc. Phil., iv, p. 168, ♀ ♂.
1896. Dalla Torre, Cat. Hym., x, p. 96.

St. Vincent and Grenada. Many specimens in both sexes.

#### 25. *Augochlora præclara*, Cresson.

1865. *Augochlora præclara*, Cress., Proc. Ent. Soc. Phil., iv, p. 169, ♀.
1896. Dalla Torre, Cat. Hym., x, p. 96.

St. Vincent. Two ♂, three ♀ specimens.

The ♂ of this species has not yet been described. It

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agrees with the ♀ in colour, but is narrower, the abdomen clavate, strongly narrowed towards base, petioliform, the antennæ longer, filiform, while the flagellum is brownish beneath.

26. *Augochlora cyaneoviridis*, n. sp.

♀. Length 6·5–7 mm. Head and thorax closely punctate, bluish-green. Ocelli red. Abdomen smooth, impunctate, bottle blue. Antennæ with the flagellum brown-black, the scape black. Mandibles dark rufous, bidentate. Labrum rufous or testaceous. Legs dark rufo-piceous, the coxæ and usually the femora bluish, the tarsi dark testaceous. Metanotum with delicate, radiating, elevated lines. Tegulæ dark rufo-piceous, sometimes with a more or less distinct bluish or greenish tinge in certain lights. Wings subfuscous, the stigma and veins brown, with the venation as in *Halictus*, the second cubital cell wider than long and receiving the first recurrent nervure near its apex, or just in front of the second transverse cubitus.

♂. Length from 5–6·5 mm. Agrees well with the ♀, but the antennæ are much longer, the mandibles acute at apex, not bidentate, and testaceous, while the tibiæ and tarsi are pale, rufo-testaceous.

St. Vincent. Many specimens.

27. *Augochlora claviventris*, n. sp.

♂. Length 4·5 mm. Head and thorax brilliant golden-green, impunctate, the head on vertex and thorax above, finely shagreened; face and clypeus smooth, polished, the anterior margin of the clypeus; the labrum, the mandibles and the palpi pale or yellowish. Antennæ long, black, the flagellum clavate, more than twice as thick at apex as at base. Legs brownish-yellow, the coxæ bronzed, the anterior and middle beneath and the hind femora except at base, and their tibiæ embrowned. Wings hyaline, the stigma and veins dark-brown, the second cubital cell narrowed, much wider than long, the first recurrent nervure interstitial with the second transverse cubitus. Abdomen elongate, narrowed, claviform, polished, shining, impunctate, piceous-black.

St. Vincent—Windward side, 1500 feet. Described from one ♂ specimen.

28. *Augochlora decora*, Smith.

1853. *Oxystoglossa decora*, Smith, Cat. Hym. B. M., i, p. 83, ♀.
1896. Dalla Torre, Cat. Hym., x, p. 178.

St. Vincent. Many ♂ and ♀ specimens.

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On account of the variability of venation, some of the species falling in this genus could easily be confused with some of the species in the genus *Halictus*. In order to prevent confusion, my recently published generic table of the *Halictinæ*, Tr. Am. Ent. Soc., xxvi, p. 92, line 10, may be modified as follows:

Ocelli normal, the lateral ocelli very distant from the eye margin.

Eyes without an emargination within; tongue short. *Halictus*, Latr.

Eyes with a more or less distinct emargination within; tongue long. *Augochlora*, Smith (= *Oxystoglossa*, Smith *pars*).

## Genus HALICTUS, Latreille.

The species of this genus, five in number, may be separated by the aid of the following table:

### TABLE OF SPECIES.

1. Abdomen not testaceous . . . . . 2

   Abdomen testaceous; head and thorax metallic green, the face below the antennæ, scutellum and pleura plumbeous; knees and tarsi testaceous. . . . . *H. gemmatus*, Smith.

2. Golden-green, bronzed or brassy-green species. . . . . 3

   Blue or plumbeous species.

   Head, thorax and abdomen entirely blue; tegulæ and antennæ black; wings fuscous; legs black with a whitish pubescence, the tibiæ and tarsi dark rufo-piceous; metanotal area not bounded by an elevated rim, but with strong radiating lines within. . . . . *H. cyaneus*, n. sp.

   Head on vertex and sometimes on the face, and the abdomen with a decided metallic green and æneous tinge, the thorax plumbeous or bluish with a slight metallic tinge in certain lights; wings hyaline or only faintly tinged; tegulæ dark rufous or rufo-piceous; metanotal area not bounded by an elevated rim, with the elevated lines within less distinct and more numerous and irregular. . . . . *H. plumbeus*, n. sp.

3. Head and thorax bronzed green, sometimes with a brassy tinge, the clypeus towards apex purplish and almost impunctate; head closely punctate; thorax feebly shagreened and somewhat sparsely punctate; metathorax above plumbeous; abdomen bronzed green and pubescent as in *H. plumbeus*; legs variable from a black to a dark rufo-piceous and clothed with a whitish pubescence, the tibiæ usually rufo-piceous, the knees tarsi and mandibles testaceous, the inner spur of hind tibiæ with four

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branches; head and thorax in ♂ more decidedly brassy, the face below the antennæ clothed with a whitish pubescence, the antennæ longer, the scape and pedicel æneous-black, the scape as long as joints 4–5 united, the flagellum brown-black, paler beneath, the second joint as long as the pedicel and first joint united, neither of which are longer than wide.

*H. sancti-vincenti*, n. sp.

Head and thorax bright gold-green, and uniformly shagreened, the mesonotum at base bluish or purplish and irregularly wrinkled; abdomen black, with a dark-brownish tinge in certain lights; beneath brownish, above microscopically shagreened; mandibles toward tips, tegulæ and legs testaceous, the femora and tibiæ obfuscated at the middle, the anterior and hind coxæ sometimes with a metallic tinge. . . . . *H. auratus*, n. sp.

### 29. *Halictus gemmatus*, Smith.

1853. *Halictus gemmatus*, Smith, Cat. Hym. B. M., i, p. 65, ♀.
1886. Dalla Torre, Cat. Hym., x, p. 63.

St. Vincent—Leeward and Windward sides. Three ♀ specimens.

### 30. *Halictus cyaneus*, n. sp.

♀. Length 5mm. Blue, the clypeus with a transverse brassy band before apex. Antennæ black, joints 1–4 of flagellum wider than long. Mandibles at apex rufo-piceous. Palpi dark rufous, the tips of the joints pale. Legs dark rufo-piceous, sometimes almost black, with a pale pubescence, the tarsi, or at least joints 2–5, testaceous. Ventral segments of abdomen piceous or testaceous at margins. Head closely punctate, the clypeus on apical half, except a few scattered punctures, impunctate, the anterior margin with a fringe of white hairs. Thorax microscopically shagreened and punctate, but not closely, except on the anterior lateral angles. Metathorax squarely truncate posteriorly, the metanotum with elevated radiating lines at base. Wings fuscous, the tegulæ rufo-piceous, polished impunctate, the stigma and veins brown-black. Inner spur of hind tibiæ with three long branches.

♂. Length 4mm. Agrees well with the ♀ but narrower, the antennæ longer, the joints of the flagellum subequal, except the first, which is only one-half the length of the second, and quadrate in outline. Abdomen elongate, subcylindrical, testaceous beneath, the

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dorsal segments sparsely and microscopically punctate basally. Hind tibial spurs simple.

St. Vincent. Described from three ♀ and two ♂ specimens.

### 31. *Halictus plumbeus*, n. sp.

♀. Length 3·5–4·5 mm. Head and thorax bluish or plumbeous, more rarely with a slight metallic tinge in certain lights, the vertex and sometimes the face, metallic greenish. Abdomen with a decided bronzed green or æneous tinge, pubescent along the sides and on the two or three apical segments. Mandibles, palpi and tarsi testaceous, rest of the legs variable, from black to rufo-piceous, the tibiæ most frequently dark rufo-piceous. Antennæ black. Head and thorax sculptured as in previous species, the clypeus sometimes with a brassy tinge at base, the elevated lines at base of the metanotum not so distinct and more irregular. Wings hyaline, the tegulæ dark brownish to testaceous, the stigma and veins brown. Inner spur of hind tibiæ with four branches.

♂. Length 3–4 mm. Agrees well with the ♀ in colour, except usually the extreme apex of the femora is pale, the tarsi including the basal joint are pale, while the abdomen is darker, more of an æneous black. The antennæ are similar to these organs in *H. cyaneus* but the second joint of the flagellum is scarcely so long as the pedicel and the first joint united. Hind tibial spurs simple.

St. Vincent.

### 32. *Halictus sancti-vincenti*, n. sp.

♀. Length 4–5·5 mm. Agrees very closely with *H. plumbeus*, but the head and thorax are metallic green or brassy, the abdomen bronzed green, the sutures of segments sometimes pale or testaceous; otherwise, in colour and pubescence, it is very similar.

The ♂ is similar to the ♀, except in the usual sexual differences, and in that the head on the vertex and the thorax are more decidedly metallic green or brassy, while the abdomen is more of an æneous black.

Grenada—St. George's, Mount Gay Estate (Leeward side); St. Vincent. Described from many specimens in both sexes.

### 33. *Halictus auratus*, n. sp.

♀. Length 5–6 mm. Head and thorax bright gold-green and uniformly shagreened, impunctate, the metanotum at base irregularly wrinkled and bluish. Abdomen black with a brown tinge in certain

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lights, microscopically shagreened with fine, delicate transverse lines. Antennæ black, the scape long, two-thirds the length of the flagellum, the latter subclavate, with joints 1–3 short, transverse. Mandibles, tegulæ and legs, testaceous, the femora and tibiæ more or less obfuscated medially, the anterior and posterior coxæ more or less metallic. Wings hyaline, the stigma and veins dark brown; first cubital cell a little longer than the second and third united, the first recurrent nervure joining the second near its apex, the second recurrent interstitial with the third transverse cubitus or uniting with the cubitus a little in front of it.

♂. Length 4–4·5 mm. Agrees well with the ♀, except the pleura and metathorax are bluish-green, the legs darker, the femora dark, rufo-piceous, the flagellum longer, the first joint about two-thirds the length of the second.

St. Vincent—Windward side, 1500 feet. Described from seven ♀ and one ♂ specimen.

The species forms quite a distinct group in the genus.

### Subfamily III. *SPHECODINÆ.*

### Genus TRIGONA, Latreille.

#### 34. *Sphecodes nigritus*, n. sp.

♂. Length 3 mm. Black, shining; the vertex and thorax above sparsely punctate; the pleura rugose-punctate; while the face between the antennæ and the ocelli is closely punctate. The clypeus is clothed with a dense whitish pubescence. Mandibles rufous, acute at apex. Antennæ black, the flagellum beneath brown-black. Tarsi and tegulæ rufo-piceous. Metathoracic enclosure with irregular raised lines. Wings hyaline, very faintly tinged with fuscous, the stigma and veins brown-black. Abdomen oblong oval, polished black, with a sparse whitish pubescence.

St. Vincent. Described from one ♂ specimen.

#### 35. *Sphecodes solitarius*, n. sp.

♂. Length 3·75 mm. Black, shining; head closely, confluently punctate, the face below the antennæ, and along the inner orbits, clothed with a cinereous pubescence. Clypeus anteriorly, the labrum, the mandibles, the palpi, the collar at sides including the tubercles, the mesosternum, the legs, including the coxæ, and the base of first segment and beneath reddish-yellow; the middle and hind tibiæ with a dark spot behind. Thorax above polished, sparsely punctate,

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the pleura, except the epimera, rugulose; metanotum also rugulose. Wings clear hyaline, the stigma very large, black, while the veins are almost black. Abdomen oblong-oval, smooth, polished, impunctate, black, except at base of first segment.

St. Vincent, 1500 feet altitude. Described from one ♂ specimen.

### 36. *Sphecodes thoracicus*, n. sp.

♀ ♂. Length from 3·5–4 mm. Head, flagellum, post-scutellum, dorsum of metanotum and the dorsum of abdomen, more or less, black; rest of abdomen, the scape, the clypeus, at least anteriorly, the mandibles, and the thorax, except as noted, honey-yellow. The head is closely, minutely punctate, the face below the antennæ clothed with a cinereous or whitish pubescence. Thorax above polished, very sparsely punctate, the postscutellum closely minutely punctate, the metanotum rugulose. Wings hyaline, the stigma and veins black. The ♂ differs from the ♀ only in being a little slenderer, the flagellum being longer, the abdomen longer, narrower and with prominent external claspers at apex.

St. Vincent. Described from seven ♀ and one ♂ specimen.

This species, with *S. solitarius*, have quite a different habitus from all other known species I have seen belonging to this genus.

## Superfamily II. *SPHEGOIDEA*.

## Family XV. OXYBELIDÆ.

## Family XVI. CRABRONIDÆ.

### Subfamily IV. *RHOPALINÆ*.

### Genus Physoscelis, Lepeletier.

### 37. *Physoscelis claviventris*, Cresson.

1865. *Crabro claviventris*, Cress., Proc. Ent. Soc. Phil., iv, p. 151, ♂.
1897. Dalla Torre, Cat. Hym., viii, p. 590.

Grenada—Balthazar and Chantilly Estate. Four ♂ specimens.

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## Family XVII. PEMPHREDONIDÆ.

### Subfamily I. *PEMPHREDONINÆ.*

### Genus STIGMUS, Jurine.

Two species of this genus are in the collection, and may be distinguished as follows:

Head, thorax and abdomen wholly black; antennæ except toward apex, tegulæ, collar at sides, front legs, middle and hind trochanters, middle legs except coxæ and femora above, and hind tarsi, honey-yellow; prothoracic tubercles posteriorly and base of hind tibiæ white. . . . . *S. smithii*, n. sp.

Head and abdomen black, the thorax and the petiole of abdomen, honey-yellow. . . . . *S. thoracicus*, n. sp.

#### 38. *Stigmus smithii*, n. sp.

♀. Length 4mm. Polished black. Mandibles, except at tips, the palpi, tubercles posteriorly, basal half of hind tibiæ and the hind tarsi, white. Antennæ, except toward tips, collar at sides, tegulæ and legs, except as noted, honey-yellow or reddish-yellow. Middle and hind coxæ above and middle and hind femora more or less blackish, the trochanters yellowish. Wings hyaline, the veins brown, the stigma large, black. Face shagreened; the clypeus clothed with a silvery pile. Pedicel thicker and one and one-half times longer than the first joint of the flagellum. Pronotum striate above; mesonotum with an indistinct median longitudinal line, smooth, impunctate, except anteriorly where the surface is finely coriaceous, and posteriorly just in front of the scutellum, where the surface is finely wrinkled; scutellum polished with a slightly impressed median line; metathorax areolated. Abdomen normal; the petiole or first segment, as long as the hind femur, striate.

St. Vincent. Described from one ♀ specimen.

#### 39. *Stigmus thoracicus*, n. sp.

♀. Length 3–4 mm. Head and abdomen, except the petiole, black. Antennæ, except the last three or four joints, the thorax, the legs, except as hereafter noted, and the petiole of the abdomen, honey-yellow. Mandibles, except tips, palpi, tarsi, and base of hind tibiæ, white; the apical half of hind tibiæ black. Wings hyaline,

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the subcostal vein and the stigma black or brown-black, the internal veins paler.

St. Vincent and Grenada—Balthazar. Described from four ♀ specimens.

An easily recognized species, differing in colour from all other described forms. One specimen differs from the others in having the metanotum blackish.

## Family XVIII. BEMBICIDÆ.

### Genus BEMBIDULA, Burmeister.

#### 40. *Bembidula variegata*, Olivier.

1787. *Bembex variegata*, Oliv., Encycl. Méth., Ins., iv, p. 293.
1845. *Monedula dissecta*, Dahlb., Hym. Europ., i, pp. 186, 494.
1851. *Monedula sericea*, Spinola, Gay's Hist. fis. Chile, Zool., vi, p. 315.
1889. *Bembidula variegata*, Handl., Sitzb. Akad. Wiss. Wien, xcviii, p. 488.
1890. Cam., Biol. Centr.-Am., Hym., ii, p. 96; pl. 6, f. 14.
1897. Dalla Torre, Cat. Hym., viii, p. 496.

St. Vincent—Windward side. One ♂ and three ♀ specimens.

### Genus MONEDULA, Latreille.

#### 41. *Monedula signata*, Linné.

1758. *Vespa signata*, Linné, Syst. Nat., Ed. 10*a*, i, p. 574.
1802. *Monedula signata*, Latreille, Hist. Nat. Ins., iii, p. 345.
1890. Handl., Sitzber. Akad. Wiss. Wien, xcix, p. 86.
1897. Dalla Torre, Cat. Hym., viii, p. 499.

St. Vincent—Kingstown (Windward side); Grenada—St. George's (Leeward side). Twelve ♀ specimens.

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## Family XIX. LARRIDÆ.

### Subfamily I. *LARRINÆ.*

### Genus LARRA, Fabricius.

#### 42. *Larra rufipennis*, Fabricius.

1804. *Liris rufipennis*, Fabr., Syst. Piez., p. 228, ♀.
1884. *Larra rufipennis*, Kohl, Verh. Zool. bot. Gesell. Wien, xxxiv, p. 247.
1897. Dalla Torre, Cat. Hym., viii, p. 673.

St. Vincent—Windward side. One ♂ and two ♀ specimens.

#### 43. *Larra luteipennis*, Cresson.

1869. *Larra luteipennis*, Cress., Tr. Am. Ent. Soc., ii, p. 293, ♂.
1884. Kohl, Verh. Zool. bot. Ges. Wien, xxxiv, p. 245.
1890. *Notogonia luteipennis*, Cameron, Mem. and Proc. Manch. Soc. (4), iii, pl. 9, f. 2.
1897. *Larra luteipennis*, Dalla Torre, Cat. Hym., viii, p. 669.

St. Vincent—Windward side; Grenada—St. George's. Many specimens.

#### 44. *Larra trifasciata*, Smith.

1856. *Larrada trifasciata*, Smith, Cat. Hym. B. M., iv, p. 290, ♀.
1884. *Larra trifasciata*, Kohl, Verh. Zool. bot. Gesell. Wien, xxxiv, p. 248.
1897. Dalla Torre, Cat. Hym., viii, p. 675.

St. Vincent—Windward side. Five ♀ specimens.

#### 45. *Larra vinulenta*, Cresson.

1865. *Larrada vinulenta*, Cress., Proc. Ent. Soc. Phil., iv, p. 138, ♀.
1884. *Larra vinulenta*, Kohl, Verh. Zool. bot. Gesell. Wien, xxxiv, p. 248.

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1897. Dalla Torre, Cat. Hym., viii, p. 675.

St. Vincent—Windward side; Grenada—St. George's (Leeward side). Many specimens, representing both sexes.

## Genus MOTES, Kohl.

### 46. *Motes fulviventris*, Guérin.

1845. *Lyrops fulviventris*, Guér., Inconogr. règn. anim., Ins., p. 440.
1850. Lucas, in La Sagra's Hist. fis. Cuba, vii, p. 766; t. 18, f. 9.
1856. *Larrada fulviventris*, Smith, Cat. Hym. B. M., iv, p. 286.
1884. *Larra fulviventris*, Kohl, Verh. Zool. bot. Ges. Wien, xxxiv, p. 244.
1897. Dalla Torre, Cat. Hym., viii, p. 667.

St. Vincent—Windward side. Twelve ♀, twelve ♂ specimens.

### 47. *Motes splendens*, n. sp.

♀. Length 13 mm. Stature and form of *M. fulviventris*, Guérin, and with a bright golden pubescence arranged as in that species, but the abdomen is wholly black, the coxæ, trochanters and femora brown-black; the wings are ferruginous, with a longitudinal fuscous streak along and near the costa to apex, the apex of front and hind legs subfuscous; claws in ♀ with a median tooth beneath.

The ♂ varies from 5·5 to 7·5 mm. and agrees well with the ♀, except the tibiæ are darker and the claws are simple.

St. Vincent (?). Described from one ♀, No. 192, and two ♂ specimens, Nos. 28 and 56. None of these specimens are labelled, and I am not quite certain that they were captured in St. Vincent.

The females of both of these species fall into the genus *Motes* of Kohl. The males, however, are difficult to distinguish from the males in *Larra*, and the only character I can find to separate them from this genus is the mesosternal suture which is distinct posteriorly for a little more than half the length of the mesosternum.

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### Genus TACHYTES, Panzer.

48. *Tachytes argentipes*, Smith.

1856. *Tachytes argentipes*, Smith, Cat. Hym. B. M., iv, p. 306, ♀.
1897. Dalla Torre, Cat. Hym., viii, p. 687.

Grenada, St. George's—Leeward side; St. Vincent. Many specimens.

## Family XX. PHILANTHIDÆ.

### Subfamily I. *CERCERINÆ.*

### Genus CERCERIS, Latreille.

49. *Cerceris nigra*, n. sp.

♀. Length 11–12 mm. Entirely black, subopaque, and rather strongly and closely punctate, with a faint sericeous pubescence, the face clothed with a silvery pubescence. Palpi brown. Mandibles and tegulæ polished black. A line laterally on the petiole and a spot laterally at base of the second abdominal segment white. Wings fuscous, with a darker streak along the costa. Head large, quadrate, with a carina between the antennæ which extends forward on the clypeus and terminates in a tooth anteriorly; clypeus anteriorly tridentate. Antennæ subclavate, reaching to tegulæ, the pedicel subglobose, one-third the length of the first joint of the flagellum, which is the longest joint; second joint of the flagellum about two-thirds the length of the first, the following joints slightly and gradually shortening and thickening. Claws ferruginous. Spines on tibiæ and tarsi pale.

St. Vincent—Windward side. Described from two ♀ specimens.

## Family XXI. TRYPOXYLIDÆ.

### Genus TRIPOXYLON, Latreille.

50. *Trypoxylon subimpressum*, Smith.

1856. *Tripoxylon subimpressum*, Smith, Cat. Hym. B. M., iv, 380, ♂.
1897. Dalla Torre, Cat. Hym. B. M., viii, p. 708.

Grenada—Balthazar (Windward side). Three ♂ specimens.

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## Family XXV. SPHEGIDÆ.

### Subfamily I. *SPHEGINÆ.*

### Genus SPHEX, Linné.

#### 51. *Sphex caliginosus*, Klug.

1848. *Sphex caliginosus*, Klug, Schomburgk's Reise in Guiana, iii, p. 589.
1888. Cameron, Biol. Centrali-Am., Hym., ii, p. 30, ♀♂; pl. 3, f. 1 ♀, f. 13 ♂.
1890. Kohl, Ann. Hofm. Wien, v, p. 412.
1897. Dalla Torre, Cat. Hym., viii, p. 418.

St. Vincent—Windward side. Five ♀ and four ♂ specimens.

#### 52. *Sphex dorsalis*, Lepeletier.

1845. *Sphex dorsalis*, Lepel., Hist. Nat. Ins. Hym., iii, p. 347, ♀.
1856. Smith, Cat. Hym. B. M., iv, p. 259.
1862. Smith, Proc. Ent. Soc. Lond. (3), i, p. 36.
1890. *Sphex ichneumonea*, var. dorsalis, Kohl, Ann. Hofm. Wien, v, pp. 123, 431.
1897. Dalla Torre, Cat. Hym., viii, p. 426.

St. Vincent—Windward side. Seven ♀ specimens.

#### 53. *Sphex singularis*, Smith.

1856. *Sphex singularis*, Smith, Cat. Hym. B. M., iv, p. 261, ♂.
1889. Cam., Biol. Centrali-Am., Hym., ii, p. 33; pl. 3, f. 7, ♂.
1890. Kohl, Ann. Naturh. Hofm. Wien, v, p. 452, ♂.
1897. Dalla Torre, Cat. Hym., viii, p. 440.

St. Vincent. Two ♀ specimens.

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### Genus HARPACTOPUS, Smith.

54. *Harpactopus thomæ*, Fabricius.

1775. *Spex thomæ*, Fabr., Syst. Entom., p. 346.
1843. *Prionyx thomæ*, Dahlb., Hym. Europ., i, p. 28.
1890. *Sphex* (*Harpactopus*) *thomæ*, Kohl, Ann. Naturh. Hofm. Wien, v, p. 358, ♀ ♂.
1897. Dalla Torre, Cat. Hym., viii, p. 443.

St. Vincent. Three ♀ and two ♂ specimens.

### Subfamily III. *SCELIPHRONINÆ.*

### Genus SCELIPHRON, Klug.

55. *Sceliphron fasciatum*, Lepeletier.

1845. *Pelopæus fasciatus*, Lepel., Hist. Nat. Ins. Hym., iii, p. 315, ♀.
1865. *Pelopæus argentifrons*, Cress., Proc. Ent. Soc. Phil., iv, p. 136, ♀.
1867. *Pelopæus fasciatus*, Saussure, Reise d. Novara Zool., ii, p. 1; Hym., p. 33 ♀.
1897. *Sceliphron fasciatum*, Dalla Torre, Cat. Hym., p. 384.

St. Vincent—Windward side. Six ♀ and four ♂ specimens.

### Superfamily III. *VESPOIDEA.*

## Family XXVII. POMPILIDÆ.

### Subfamily I. *PEPSINÆ.*

### Genus PEPSIS, Fabricius.

56. *Pepsis terminata*, Dahlbom.

1843. *Pepsis terminata*, Dahlbom, Hym. Europ., i, p. 120.
1845. *Pepsis ornata*, Lepel., Hist. Nat. Ins. Hym., iii, p. 416.
1856. Lucas, in La Sagra's Hist. fis. Cuba, vii, p. 761.
1867. Cress., Tr. Am. Ent. Soc., i, p. 148.
1895. *Pepsis terminata*, Lucas, Berl. ent. Zeitschr., xxxix, p. 552, ♀ ♂, tab. 32, f. 117.
1897. Dalla Torre, Cat. Hym., viii, p. 264.

St. Vincent. Two ♀ specimens.

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57. *Pepsis deuteroleuca*, Smith.

1855. *Pepsis deuteroleuca*, Smith, Cat. Hym. B. M., iii, p. 196, ♂.
1894. Mocsary, Termesz. Fuzet., xviii, p. 5, ♀ ♂.
1894. *Pepsis postica*, (Mocsary) R. Lucas, Berl. ent. Zeitschr., xxxix, pp. 560, 840.
1894. *Pepsis deuteroleuca*, Lucas, l. c., pp. 560–61 and 57, tab. 32, f. 131.
1897. Dalla Torre, Cat. Hym., viii, p. 251.

Grenada—St. George's (Leeward side). Four ♀ and four ♂ specimens.

Subfamily III. *POMPILINÆ.*

Tribe I. POMPILINI.

Genus POMPILUS, Fabricius.

58. *Pompilus cubensis*, Cresson.

1865. *Pompilus anceps*, Cress., Proc. Ent. Soc. Phil., iv, p. 130, ♂, *nec* Smith.
1867. *Pompilus cubensis*, Cress., Tr. Am. Ent. Soc., i, p. 93, ♀ ♂.
1897. Dalla Torre, Cat. Hym., viii, p. 282.

St. Vincent—Windward side. Eleven ♀ and fifteen ♂ specimens.

NOTE.—*Pompilus juxtus*, Cress. and *P. subargenteus*, Cr., the latter probably the ♂ of the former, were also taken in Grenada.

Genus PŒCILOPOMPILUS, Ashmead.

59. *Pœcilopompilus navus*, Cresson.

1867. *Pompilus navus*, Cress., Tr. Am. Ent. Soc., i, p. 105, ♀ ♂.
1897. Dalla Torre, Cat. Hym., viii, p. 304.
1889. *Pompilus coquillettii*, Prov., Add. Fn. Hym. du Can., p. 261, ♂.
1897. Dalla Torre, Cat. Hym., viii, p. 283.

St. Vincent—Windward side. Fifteen ♂ and ♀ specimens.

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Genus HEMISALIUS, Saussure.

60. *Hemisalius opacifrons*, Fox.

1891. *Sabius opacifrons*, Fox, Tr. Am. Ent. Soc., xviii, p. 340, ♀.
1897. Dalla Torre, Cat. Hym. viii, p. 235.
1891. *Agenia compressa*, Fox, l. c. p. 340, ♂.
1897. *Pseudagenia compressa*, Dalla Torre, l. c. p. 201.

St. Vincent—Windward side and at sea level. Twenty-six ♀ and nineteen ♂ specimens.

Fox's types, ♂ and ♀, are in the U.S. National Museum and came from Jamaica; the ♀ he described under the genus *Salius*, the ♂ under the genus *Agenia*.

Tribe II. APORINI.

None.

Subfamily IV. *PLANICEPINÆ*.

Genus PLANICEPS, Latreille.

61. *Planiceps euferalis*, Fox.

1891. *Planiceps euferalis*, Fox, Tr. Am. Ent. Soc., xviii, p. 341, ♂.
1897. Dalla Torre, Cat. Hym., viii, p. 287.

St. Vincent—Windward side. Six ♂ specimens averaging from 3·5 to 5 mm., therefore somewhat smaller than Fox's type, which came from Jamaica.

62. *Planiceps tarsalis*, n. sp.

♀. Length 10–11 mm. Black, with a bluish tinge. Palpi fuscous. Legs, except the tarsi which are black or fuscous, rufous. Wings fuliginous, the second recurrent nervure uniting with the cubitus beyond the second transverse cubitus. Anterior femora much swollen, the anterior tarsi rather short, the 1 and 5, subequal, 2 to 4 very short, hardly longer than thick.

♂. Length 4–5 mm. Black with a sparse glittering pubescence. Legs, except the middle and hind femora which are rufous, black. Wings subfuliginous, much paler than in the ♀. Front femora normal, beneath piceous or tinged with ferruginous, the tarsi normal, longer than the tibiæ.



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Grenada and St. Vincent. Described from four ♀ and five ♂ specimens.

The ♂ of this species closely resembles *P. euferalis*, Fox, but may be easily separated from it by the colour of the legs.

### Subfamily VI. *CEROPALINÆ.*

### Genus CEROPALES, Latreille.

#### 63. *Ceropales cubensis*, Cresson.

1865. *Ceropales cubensis*, Cresson, Proc. Ent. Soc. Phil., iv, p. 132, ♀.
1867. Cress., Tr. Am. Ent. Soc., i, p. 141, ♀♂.
1892. Fox, l. c. xix, p. 53, ♀♂.
1897. Dalla Torre, Cat. Hym., viii, p. 341.

Grenada—St. George's (Leeward side). Four ♀ and two ♂ specimens.

## Family XXVIII. VESPIDÆ.

### Subfamily I. *POLISTINÆ.*

### Genus POLISTES, Latreille.

#### 64. *Polistes cincta*, Lepeletier.

1836. *Polistes cincta*, Lepel., Hist. nat. Ins. Hym., i, p. 522.
1853. *annularis*, Sauss., Etud. fam. Vesp., ii, p. 79 *pars.*
1894. *annularis*, Dalla Torre, Cat. Hym., ix, p. 122 *pars.*

St. Vincent (Windward side), Kingston; Canonan Isle. Several specimens.

I cannot agree with Saussure in believing this to be either identical with or a variety of *P. annularis*, Fabr. It is quite distinct in colour and in several important structural characters from that species, which is common in our Southern States.

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### Genus POLYBIA, Lepeletier.

65. *Polybia occidentalis*, Olivier.

1791. *Vespa occidentalis*, Oliv., Encycl. Méthod. Ins., vi, p. 675.
1884. *Myraptera elegans*, Curtis, Tr. Linn. Soc. Lond., xix, p. 258; pl. 31, f. 9.
1853. *Polybia occidentalis*, Sauss., Etud. fam. Vespid., ii, p. 194.

St. Vincent—Kingstown (Windward side). Eight ♀ specimens.

## Family XXIX. EUMENIDÆ.

### Genus MONOBIA, Saussure.

66. *Monobia insularis*, n. sp.

♀. Length 24 mm. Black, subopaque, coriaceous, finely punctate, and clothed with a fine, microscopic sericeous pubescence. Hind angles of metathorax subdentate with a rufous line. Clypeus anteriorly subemarginate. Scape beneath rufous. Legs black, the tibiæ beneath and the tarsi rufescent. Mesonotum with the parapsidal furrows distinct only posteriorly. Scutellum with a delicate median impressed line. Tegulæ black, with a rufous spot. Wings blue-black, fuscous at apex. Abdomen entirely black, microscopically punctate, the first segment with a smooth impunctate space at apex.

Grenadines—Canonan Isle. Described from a single ♀ specimen.

The species comes apparently nearest to *M. guadulupensis*, Sauss.

### Genus ODYNERUS, Latreille.

67. *Odynerus sancti-vincenti*, n. sp.

♀ ♂. Length 8–10·5 mm.; ♂ 7–8 mm. Black, closely rugosopunctate. Scape beneath, spot between antennæ, anterior orbits but not extending into the sinus of the eyes, clypeus entirely, a spot at base of mandibles, pronotum above entirely, two large almost confluent spots on the scutellum, postscutellum, hind angles of metathorax, broad apical bands on all dorsal abdominal segments and the ventral segments, except the first, sometimes a lateral spot on second dorsal segment, and most of the legs, except toward base,

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yellow. Coxæ, trochanters and the femora *basally* black. Wings flavo-ferruginous, with a slight fuscous tinge at apex.

The ♂ agrees well with the ♀, except the yellow on the anterior orbits extends within the sinus of the eyes, the mandibles have a yellow central stripe and the two or three apical abdominal segments are yellow or ferruginous.

St. Vincent—Kingstown (Windward side). Described from thirteen ♀ and two ♂ specimens. The species is evidently allied to *O. guadulupensis*, Sauss.

68. *Odynerus grenadensis*, n. sp.

♀ ♂. Length 7–11 mm. Black, closely punctate. Scape beneath, a spot between antennæ, a short line on anterior orbits, the clypeus, except a large oval black spot connected with the black on the face, a spot on mandibles at base, pronotum above, except a triangular black spot on hind angles, a spot beneath the tegulæ, two widely separated spots on the scutellum, the postscutellum, hind angles of metathorax, broad bands on first and second dorsal abdominal segments at apex and on ventral segments 2–5, the apical joint of anterior tarsi, extreme tip of femora, and a band on outer face of all the tibiæ, yellow; rest of legs black. Wings subfuscous, with a cloud in the radial cell.

The ♂ differs from the ♀ in having the anterior yellow orbital line extending along the sinus of the eyes, the clypeus wholly yellow, a yellow dot at apex of all femora *above*, and a short yellow line on the anterior femora *beneath*.

Grenada—St. George's (Leeward side). Described from eight ♀ and ten ♂ specimens. The species comes evidently nearest to *O. præcox*, Saussure.

## Family XXX. MASARIDÆ.

## Family XXXI. CHRYSIDIDÆ.

## Family XXXII. BETHYLIDÆ.

### Subfamily I. *BETHYLINÆ*.

### Genus ISOBRACHIUM, Förster.

(*Dissomphalus*, Ashmead.)

69. *Dissomphalus bisulcatus*, Ashm.

Grenada—Balthazar. Two ♂ specimens.

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Genus EPYRIS, Westwood.

Genus GONIOZUS, Förster.

70. *Goniozus sancti-vincenti*, Ashm.

Grenada—Balthazar. One ♀ specimen.

71. *Goniozus incompletus*, Ashm.

Grenada—Balthazar. One ♀ and one ♂ specimen.

Subfamily. *EMBOLEMINÆ.*

To this subfamily belongs *Olixon testaceum*, Cameron, described as a Braconid.

Subfamily III. *DRYININÆ.*

Genus LABEO, Haliday.

72. *Labeo grenadensis*, n. sp.

♂. Length 1·9 mm. Black, shining; the abdomen black but with a rufous tinge at sides, especially toward the base. Mandibles rufous. Palpi white. Antennæ brown-black, pubescent, the third joint the longest, fully six times as long as wide, and considerably longer than joints 1 and 2 united, the following joints to the last gradually shortening. Head closely minutely punctate, wider than the thorax, with the occiput deeply semicircularly emarginated; ocelli red; eyes large, rounded, pubescent. Mesothorax polished, impunctate, the parapsidal furrows distinct. Metathorax closely punctate, opaque. Wings hyaline, the stigma and veins light brown, the marginal cell closed. Legs pale yellowish-white, the coxæ black, the femora embrowned whitish at tips, the middle and hind tibiæ dusky at tips.

Grenada—Mirabeau Estate (Windward side). Described from a single ♂ specimen.

Genus APHELOPUS, Dalman.

73. *Aphelopus albopictus*, Ashmead.

Grenada—Balthazar (Windward side). One ♂ specimen.

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## Family XXXIII. TRIGONALIDÆ.

## Family XXXIV. SAPYGIDÆ.

## Family XXXV. MYZINIDÆ.

## Family XXXVI. SCOLIIDÆ.

### Subfamily I. *SCOLIINÆ.*

### Subfamily II. *ELIDINÆ.*

### Genus COMPSOMERIS, Lepeletier.

#### 74. *Compsomeris peregrina*, Lepeletier.

1845. *Colpa peregrina*, Lepel., Hist. Nat. des Ins. Hym., iii, p. 534.
1805. *Scolia atrata*, Klug, Weber u. Mohr. Beitr. z. naturk. i, p. 21 (nec. Fabr.).
1853. *Scolia peregrina*, Burm., Abh. naturf. Ges. Halle, i, p. 22, ♀.
1864. *Elis* (*Dielis*) *peregrina*, Sauss. et Sichel, Cat. Scolia, p. 217, ♀ ♂.
1874. *Elis peregrina*, Bol. Acad. Nae. Cordova, i, p. 41.
1897. *Scolia peregrina*, Dalla Torre, Cat. Hym., viii. p. 173.

Grenada—One ♂ specimen.

#### 75. *Compsomeris dorsata*, Fabricius.

1787. *Tiphia dorsata*, Fabr., Mant. Ins., i, p. 279.
1790. Gmelin, Linné, Syst. nat. Ed. 13*a*, i, 5, p. 2741.
1793. Fabr., Ent. Syst., ii, p. 226.
1804. Fabr., Syst. Piez., ii, p. 235.
1807. *Scolia dorsata*, Klug, Mag. ges. naturf. Fr. Berlin, ii, p. 48.
1810. Klug, Beitr. z. naturk., p. 212.
1833. *Scolia hæmatogaster*, Perty, Delect. anim. artic. Brasil, p. 139; t. 27, f. 14.
1845. *Colpa rubida*, Lepel., Hist. nat. Ins. Hym., iii, p. 544.
1848. *Scolia hæmatogastra*, Erichson, Schomburgk's Faun. & Fl. B. Guiana, iii, p. 589.

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1853. *Scolia dorsata,* Burm., Abh. naturf. Ges. Halle, i, pp. 4, 21.
1854. *Elis dorsata,* Sauss., Mém. soc. phys. & hist. nat. Genève, xiv, pp. 1, 55.
1864. *Elis* (*Dielis*) *dorsata,* Sauss. & Sichel, Cat. Scolia, pp. 230, 208.
1893. *Elis dorsata,* Cam., Biol. Centrali-Am., Hym., ii, p. 230.
1897. *Scolia dorsata,* Dalla Torre, Cat. Hym., viii, p. 155.

St. Vincent. Seven ♀ and thirteen ♂ specimens.

The ♂ of this species has been confused with *C. plumipes,* Drury, and is separated with difficulty. The clypeus, however, is margined with white, and all the tibiæ have a white stripe on outer face, although the stripe is sometimes absent on the hind tibiæ. In *plumipes* the clypeus is wholly black and the anterior tibiæ alone are striped with white.

## Family XXXVII. TIPHIIDÆ.

### Genus TIPHIA, Fabricius.

#### 76. *Tiphia argentipes,* Cresson.

1865. *Tiphia argentipes,* Cress., Proc. Ent. Soc. Phil., iv, p. 117, ♀♂.
1897 Dalla Torre, Cat. Hym., viii, p. 134.

St. Vincent—Windward side. Many specimens.

#### 77. *Tiphia nitida,* Smith.

1855. *Tiphia nitida,* Smith, Cat. Hym. B. M., iii, p. 84, ♀.
1897. Dalla Torre, Cat. Hym., viii, p. 139.

St. Vincent. Many specimens.

## Family XLII. MUTILLIDÆ.

### Genus TIMULLA, Ashmead.

1899. *Timulla,* Ashm., Journ. N. Y. Ent. Soc., viii, p. 55.

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TABLE OF SPECIES.

*Males* . . . . . 2

*Females*

Head and abdomen black, the thorax red; abdominal segments 1 and 2 banded at apex with a silvery pubescence; dorsal segments 2–6 on each side with a longitudinal band of silvery pubescence . . . . . *T. mediata*, Fabr. = *lineola*, Fabr. ♀.

Black; abdominal segments 1 and 2 broadly banded at apex with a golden pubescence; dorsal segment 2 with a large quadrangular spot on each side at base; dorsal segments 3–6 on each side with a broad longitudinal band of golden pubescence. *T. rufiventris*, Klug.

2. Head and thorax black, with a whitish or silvery pubescence. Abdomen, except the first and seventh segments which are black, rufous; first recurrent nervure joining the second cubital cell at the middle. . . . . *T. mediator*, Fabr.

Abdomen, except sometimes the extreme base of the first segment, entirely rufous; first recurrent nervure joining the second cubital cell distinctly beyond the middle. . . . *T. rufiventris*, Klug.

### 78. *Timulla mediata*, Fabricius.

1804. *Dorylus mediatus*, Fabricius, Syst. Piez., p. 428, ♂.
1804. *Mutilla lineola*, Fabr. l. c. p. 437, ♀.
1897. *mediata*, Dalla Torre, Cat. Hym., viii, p. 59.

St. Vincent—Kingstown; Grenada—Balthazar and St. George's. Six ♀ and seven ♂ specimens.

### 79. *Timulla rufiventris*, Klug.

1821. *Mutilla rufiventris*, Klug, Nov. Acta Akad. Nat. Curios., x, p. 306, ♂; tab. 21, f. 12.
1874. *Mutilla mediata*, var. *rufiventris*, Gerst., Arch. f. Naturg., xl, p. 323, ♂.
1897. Dalla Torre, Cat. Hym., viii, p. 60, ♂.

♀. Length 5–7·5 mm. Black, the head and thorax confluently punctate. Abdomen with the apex of the first segment narrowly and the apex of the second segment broadly margined with a golden pubescence; two large spots on second segment, and two on each of the following segments clothed with a bright golden pubescence.

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St. Vincent—Kingstown; Grenada—Windward side. Four ♀ and seven ♂ specimens. A ♂ and a ♀ labelled St. Vincent (Windward side) were taken *in coitu.*

The species is quite distinct from *mediata*, and is in no sense a variety of it as some authorities have indicated.

## Genus PSEUDOMETHOCA, Ashmead.

### 80. *Pseudomethoca unicincta*, n. sp.

♀. Length 4 mm. Opaque black, confluently punctate, clothed with a sparse glittering white pubescence, interspersed with black hairs. Second dorsal segment of abdomen with a broad red band on apical half, the red medially extending to the apex of the segment but laterally separated by a black stripe; abdominal segments with a small wedge-shaped spot at apex. Antennæ and mandibles rufo-piceous. Legs dark rufo-piceous, almost black, the tarsi testaceous. Head large, quadrate, the temples broad, acute behind and ending in a tooth below. Thorax narrowed posteriorly, the hind angles toothed; the superior hind angles of the mesopleura also produced into a triangular tooth.

♂. Agrees in size with the ♀, but the body is entirely black and shining, except a reddish tinge at base of second abdominal segment; the head, thorax, legs and abdomen are clothed with a sparse whitish pubescence and sparsely but distinctly punctate, the metathorax coarsely reticulated. Antennæ as long as the thorax, filiform, the scape brown-black, the pedicel and flagellum brown. Head unarmed. Mandibles 3-dentate, rufous. Legs rufo-piceous, the trochanters and tarsi paler. Tegulæ ferruginous. Wings subhyaline, with only two cubital cells, the stigma brown-black, the veins testaceous.

St. Vincent. Described from one ♀ and one ♂ specimen. The female is labelled "Golden Grove (Leeward), 300 feet, Dec. 7. Found dead in a jar of water from a neighbouring spring." The male is labelled "Sea level, Windward side."

Mr. Wm. J. Fox, in "The American *Mutillidæ*," p. 221, says: "The groups represented by *Pseudomethoca*, Ashmead, are the American representatives of *Myrmilla* (Wesm.), André." In this Mr. Fox is quite mistaken, and he probably wrote the sentence before my generic table of the *Mutillidæ* appeared. The only representative of *Myrmilla*, Wesmael, in America, that I have seen, is *Mutilla grandiceps*, Blake, which represents quite a distinct group from Pseudomethoca.

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Superfamily IV. *FORMICOIDEA.*

Superfamily V. *PROCTOTRYPOIDEA.*

## Family L. PELECINIDÆ.

### Genus PELECINUS, Latreille.

81. *Pelecinus polyturator*, Drury. W. I., Jamaica.

## Family LI. HELORIDÆ.

### Genus MONOMACHUS, Westwood.

82. *Monomachus Klugii*, Westwood. W. I.

## Family LII. PROCTOTRYPIDÆ.

### Genus PROCTOTRYPES, Latreille.

83. *Proctotrypes antillarum*, n. sp.

♂. Length 1·75 mm. Polished black, except the metathorax which is irregularly reticulated, with a delicate median carina. Tegulæ flavo-testaceous. Wings hyaline, without internal veins, the stigma light brownish, the short triangular radial cell along the costa not quite as long as the stigma. Legs yellowish, the anterior and hind coxæ blackish, the hind femora except basal third and their tibiæ except at base brown.

Grenada—Grand Etang (Windward side), 1900 feet. Described from a single ♀ specimen. This is the smallest species I have seen, and the first in the genus to be described from the West Indies.

## Family LIII. BELYTIDÆ.

Not yet found in the West Indies, although I have species from South America, and it undoubtedly occurs there.

## Family LIV. DIAPRIIDÆ.

Subfamily I. *SPILOMICRINÆ.*

### Genus PARAMESIUS, Westwood.

84. *Paramesius thoracicus*, Ashmead.

Grenada—Balthazar. One ♂ specimen.

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Genus SPILOMICRUS, Westwood.

85. *Spilomicrus vulgaris*, Ashmead.

Grenada—Balthazar. One ♂ specimen.

Subfamily II. *DIAPRIINÆ.*

Genus GALESUS, Curtis.

86. *Galesus bipunctatus*, Ashmead.

Grenada—Balthazar. One ♂ specimen.

Genus DIAPRIA, Latreille.

87. *Diapria grenadensis*, Ashmead.

Grenada—Balthazar. Four ♀ specimens.

Genus PHÆNOPRIA, Ashmead.

88. *Phænopria subclavata*, Ashmead.

Grenada—Balthazar. Four ♀ specimens.

Family LV. CERAPHRONIDÆ.

Subfamily II. *CERAPHRONINÆ.*

Genus CERAPHRON, Jurine.

89. *Ceraphron meridionalis*, Ashmead.

Grenada—Balthazar. One ♀ specimen.

Genus APHANOGMUS, Thomson.

90. *Aphanogmus grenadensis*, Ashmead.

Grenada—Balthazar. Two additional ♀ specimens.

91. *Aphanogmus insularis*, Ashmead.

♂. Length 0·4 mm. Agrees well with the ♀, except in the smaller size, the femora and tibiæ being rufo-piceous, while the antennæ are black with sparse long hairs.

Grenada—Balthazar. One ♂ specimen.

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## Family LVI. SCELIONIDÆ.

### Subfamily I. *TELENOMINÆ.*

### Genus TELENOMUS, Haliday.

92. *Telenomus connectans*, Ashmead.

Grenada—Balthazar (Chantilly Estate). Four additional specimens.

93. *Telenomus magniclavus*, Ashmead.

Grenada—Balthazar. Two ♀ specimens.

94. *Telenomus albitarsis*, Ashmead.

Grenada—Balthazar. One ♀ specimen.

95. *Telenomus confusus*, Ashmead.

Grenada—Balthazar. Two ♀ specimens.

96. *Telenomus impressus*, Ashmead.

Grenada—Balthazar. One ♀ specimen.

97. *Telenomus latifrons*, Ashmead.

Grenada—Mirabeau Estate. One ♂ specimen.

### Subfamily II. *BÆINÆ.*

### Genus ACOLOIDES, Howard.

98. *Acoloides fuscipennis*, Ashmead.

Grenada—Balthazar. One ♀ specimen.

### Subfamily IV. *SCELIONINÆ.*

### Genus CALOTELEIA, Westwood.

99. *Calotelcia maculipennis*, Ashmead.

Grenada—Mirabeau Estate and Balthazar. Two ♂ specimens.

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### 100. *Caloteleia nigriceps*, n. sp.

♀. Length 2·3 to 2·4 mm. Black; antennæ, except club, the mesonotum, legs entirely, first abdominal segment beneath and a transverse band on third ventral segment brownish yellow. Head and thorax closely punctate; metascutellum bidentate; first abdominal segment, with the short horn, longitudinally striated, rest of abdomen smooth, shining. Wings hyaline, or only faintly dusky, the veins pale, the stigmal vein nearly three times as long as the marginal and ending in a small rounded knob. The ♂ agrees fairly well with the ♀ except that the face below, with the cheeks, the pronotum, mesosternum and the scutellum, as well as the mesonotum, are yellow, while the second and third abdominal segments both beneath and above are yellow. The flagellum is long, filiform, black, the joints subequal, four or five times longer than thick.

Grenada—Balthazar. Described from one ♀ and two ♂ specimens.

## Genus MACROTELEIA, Westwood.

### 101. *Macroteleia grenadensis*, n. sp.

♂. Length 3·8 mm. Black, shining, but distinctly although not closely punctate; mandibles, scape and legs brownish-yellow; flagellum long, filiform, black, the joints subequal, about five times as long as thick. Mesonotum without parapsidal furrows. Wings hyaline, the tegulæ ferruginous, the veins brown-black, the stigmal vein, with the small rounded knob, a little longer than the marginal vein. Abdomen elongate, fully two and a half times as long as the thorax.

Grenada—Grand Etang (Leeward side), 1900 feet. Described from one ♂ specimen.

This species differs from all other species described under this genus in the absence of parapsidal furrows, and in the shortness of the marginal vein. It may ultimately form the type of a new genus.

## Genus CACUS, Riley.

### 102. *Cacus insularis*, Ashmead.

Grenada—Mirabeau and Balthazar. Two ♂ specimens.

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## Genus LAPITHA, Ashmead.

### 103. *Lapitha spinosa*, Ashmead.

Grenada—Mirabeau and Balthazar. Two ♂ specimens.

## Genus SCELIO, Latreille.

The two species represented in this genus may be separated by the following characters:

Coarsely rugose, the mesonotal furrows in both sexes broad and distinct: anterior half of mesonotum, prothorax, scape, pedicel and legs yellow or brownish-yellow. . (1) *S. thoracicus*, n. sp.

Legs coarsely rugose, the mesonotal furrows, except in the male, obliterated or confused with the sculpture, the metathoracic angles covered with a dense whitish or silvery pubescence; body wholly black. . . . . (2) *S. insularis*, n. sp.

### 104. *Scelio thoracicus*, n. sp.

♂ ♀. Length 4–4·5 mm. Black, very coarsely rugose, the anterior half of the mesonotum, prothorax, dilated angles of the metathorax and the legs yellow or brownish-yellow. Thorax with two broad, distinct parapsidal furrows. Postscutellum bidentate. Wing hyaline at basal third or more, fuscous beyond, the stigma brown, with a distinct stigmal vein, from the tip of which issues a fuscous ray, forming a more or less distinct marginal cell.

Abdomen rugose-punctate and striate, somewhat smoother at the middle. Antennæ in ♀ with the pedicel more than twice as long as the first joint of the funicle, the following joints transverse; scape, pedicel and first joint of funicle yellow; rest of antennæ brown-black. Antennæ in ♂ 10-jointed, pale brownish, the scape and pedicel yellow.

St. Vincent—Leeward side. Described from one ♀ and three ♂ specimens.

### 105. *Scelio insularis*, n. sp.

♂ ♀. Length 2·8–3 mm. Black, coarsely rugose, the mesonotum in the ♂ without distinct furrows; legs brownish-yellow, the coxæ black, the femora sometimes obfuscated. Postscutellar teeth present but not large. Angles of metathorax very prominent and densely clothed with a white or silvery pubescence. Wings subfuscous,

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hyaline at base, the stigma and stigmal veins brown, distinct. Abdomen above coarsely striate, the venter more faintly striate. Antennæ brown, the pedicel yellowish.

St. Vincent. Described from seven ♂ and three ♀ specimens.

## Family LVII. PLATYGASTERIDÆ.

### Subfamily I. *INOSTEMMINÆ.*

### Genus ACEROTA, Förster.

106. *Acerota confusa*, Ashmead.

St. Vincent. One additional ♀ specimen.

### Subfamily II. *PLATYGASTERINÆ.*

### Genus AMBLYASPIS, Förster.

*a.* Scutellum ending in a long acute spine.

107. *Amblyaspis xanthopus*, Ashmead.

Grenada—Balthazar. Several additional specimens representing both sexes.

### Genus LEPTACIS, Förster.

108. *Leptacis obscuripes*, Ashmead.

Grenada—Balthazar. One additional ♀ specimen.

### Genus SACTOGASTER, Förster.

109. *Sactogaster affinis*, Ashmead.

Grenada — Mirabeau Estate, Balthazar. Five ♀ specimens.

### Genus SYNOPEAS, Förster.

110. *Synopeas flavipes*, Ashmead.

Grenada—Balthazar. Four additional specimens.

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Superfamily VI. *CYNIPOIDEA.*

## Family LVIII. FIGITIDÆ.

Subfamily I. *FIGITINÆ.*

### Genus SOLENASPIS, Ashmead.

111. *Solenaspis bifoveolata*, Cresson.

Grenada—Grand Etang (Windward side), 1900 feet. One ♂ specimen.

Subfamily V. *EUCŒLINÆ.*

### Genus EUCŒLIDIA, Ashmead.

112. *Eucœlidia canadensis*, Ashmead.

Grenada—Balthazar (Windward side). One ♀ specimen.

### Genus DICERATASPIS, Ashmead.

113. *Diceratasp is grenadensis*, Ashmead.

♂. Length 0·8 mm. Agrees well with the ♀ except in its much smaller size and in its antennal characters: These are long, much longer than the body, filiform, 15-jointed, rufous, the first joint subglobose, a little longer than thick, the second rounded, the third the longest and longer than 1 and 2 united, clavate, the fourth and following joints shorter, subequal, elliptic-oval, about 2½ times as long as thick, striate. Wings hyaline, ciliate, the veins brownish-yellow, the marginal cell open all along the costa.

Grenada—Balthazar (Windward side). Described from two specimens.

The species was originally described from a unique female taken on Mount Gay Estate.

### Genus ERISPHAGIA, Förster.

114. *Erisphagia nigriceps*, n. sp.

♀. Length 1·5 mm. Polished, impunctate, the head and six terminal joints of antennæ black; thorax and abdomen red; seven basal joints of antennæ and the legs yellow. Wings hyaline, the veins pale brownish, the marginal cell closed. First two joints of antennæ subglobose, nearly equal, joints 3 to 5 slenderer, subequal and subclavate, 6 and 7 much stouter, 8 to 13 forming a more or less distinct club,

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the joints being of a uniform thickness, and joints 8 to 12 of the same length, while the 13th joint is ovate; the 8 terminal joints are all delicately fluted.

Grenada—Balthazar. Described from one ♀ specimen.

Genus KLEIDOTOMA, Westwood.

115. *Kleidotoma atrocoxalis*, Ashmead.

Grenada—Balthazar. Two ♀ specimens.

116. *Kleidotoma smithii*, Ashmead.

Grenada—Balthazar. Four ♀ specimens.

Genus TETRARHAPTA, Förster.

117. *Tetrarhapta rufipes*, Ashmead.

Grenada—Balthazar. Four ♀ specimens.

Genus AGLAOTOMA, Förster.

118. *Aglaotoma nigriceps*, n. sp.

♀. Length 1·3–1·5 mm. Polished, impunctate, the head black, the thorax and abdomen ferruginous; antennæ, except the last two or three joints which are dusky or blackish, and the legs, yellow; joints 8 and 9 of antennæ usually whitish. The antennæ are long, 13-jointed and subfiliform, only slightly thickened towards apex; first joint obconical, scarcely twice as long as thick at apex, the second joint scarcely longer than thick; flagellum not terminating in a decided club, the last joint the longest and thickest joint and almost as long as joints 13 and 14 united, the first joint the slenderest, fully as long as the scape and pedicel united, but only slightly longer than the second, the following joints imperceptibly shortening and thickening, the 14th joint being only about twice as long as thick, the first being fully four times as long as thick. Cup of scutellum elliptic but connected with the mesonotum by a delicate keel anteriorly, the scutellum itself, below the margin of the cup, finely rugulose; disk of cup with a fovea posteriorly and some minute punctures. Metathorax bicarinate. Wings hyaline, ciliate, the veins pale, the marginal cell closed, fully twice as long as wide at widest part, the second abscissa of radius being one and $\frac{2}{3}$ times as long as the first abscissa.

Grenada—Balthazar. Described from three ♀ specimens.



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### 119. *Aglaotoma longicornis*, Ashmead.

♂. Length 1·4–1·5 mm. Agrees well with the ♀ except in its smaller size and in the long 15-jointed antennæ; these are much longer than the body, ferruginous, the second joint rounded, half the length of the first, the third joint elongated, much thickened, curved and almost as long as joints 4 to 5 united, joints 4 to 15 subequal, about twice as long as thick; all flagellar joints delicately fluted.

Grenada—Balthazar. Five ♂ specimens.

## Genus DIRANCHIS, Förster.

### 120. *Diranchis grenadensis*, n. sp.

♀. Length 1·3 mm. Robust, black, shining; antennæ except three or four terminal joints which are dusky, the mandibles, palpi, legs and venter reddish-yellow, the coxæ and femora a little darker or obfuscated. Mesonotum with a prominent median ridge which is broadened anteriorly, and a distinct but short furrow on the shoulders. Scutellum with the cup large, oval, its disk smooth but with a few punctures, the furrow below the cup with radiating ridges. Wings hyaline, except at base where they are dusky, the marginal cell almost as wide as long, open along the costa, the subcostal and transverse median veins brownish, the veins beyond pale or yellowish. Antennæ 13-jointed, the first joint of flagellum not quite as long as the second, joints 3 to 12 elliptic-oval.

Grenada—Balthazar. Described from one ♀ specimen.

### 121. *Diranchis flavipes*, n. sp.

♀. Length 1·6 mm. General appearance similar to *D. grenadensis* but slightly larger, with the first two joints of antennæ and the legs yellow, the rest of antennæ brown-black. The cup of scutellum is large-oval as in previous species but the disk has two foveæ in the centre surrounded by a submarginal groove, while the furrow below the cup is minutely rugulose *without* radiating ridges. The wings are clear hyaline, with the marginal cell open along the costa but nearly twice as long as wide, while the veins are pale yellowish.

Grenada—Chantilly Estate. Described from one ♀ specimen.

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### Genus GANASPIS, Förster.

122. *Ganaspis iridipennis*, n. sp.

♀. Length 1 mm. Polished black, impunctate; antennæ reddish-brown; legs yellow, the coxæ and thickened portion of the femora reddish. Antennæ 13-jointed, filiform, longer than the body; first joint obconical, longer than the second, the second oval, the third narrower and a little shorter than the second, the following joints to the 13th subequal but imperceptibly shortening, elliptic-oval. Cup of scutellum large, broadly oval and connected anteriorly with the mesonotum by a slight carina; disk of cup flat, with a single fovea anteriorly. Wings hyaline, pubescent, strongly iridescent, the veins brown, the marginal cell completely closed, about one and a half times as long as wide, the second abscissa of the radius curved slightly outwardly and a little longer than the first which is straight.

Grenada—Balthazar. Described from two ♀ specimens.

### Genus CHRESTOSEMA, Förster.

123. *Chrestosema pallidipes*, Ashmead.

Grenada—Balthazar. One ♀ specimen.

### Genus HEPTAMEROCERA, Ashmead.

124. *Heptamerocera gracilicornis*, Ashmead.

Grenada—Balthazar. Two ♀ specimens.

125. *Heptamerocera flavicornis*, Ashmead.

Grenada—Balthazar. Two ♀ specimens.

### Genus EUCŒLA, Westwood.

126. *Eucœla cressonii*, Dalla Torre.

Grenada—Balthazar. One ♂ and two ♀ specimens.

127. *Eucœla canaliculata*, Ashmead.

Grenada—Balthazar. Three specimens.

### Genus HEXAPLASTA, Förster.

128. *Hexaplasta incongrua*, Ashmead.

Grenada—Balthazar. One ♀ specimen.

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129. *Hexaplasta sancti-vincenti*, Ashmead.

Grenada—Balthazar. One ♂ and three ♀ specimens.

130. *Hexaplasta instabilis*, Ashmead.

Grenada—Mirabeau Estate, Balthazar. Three ♀ specimens.

131. *Hexaplasta affinis*, Ashmead.

Grenada—Balthazar. One ♀ specimen.

Genus PENTAMEROCERA, Ashmead.

132. *Pentamerocera distinguenda*, Ashmead.

Grenada—Balthazar. Six ♂ specimens.

♂ agrees with the ♀ except in having filiform, 15-jointed antennæ. These are much longer than the body, brownish-yellow, somewhat dusky towards apex, the first joint obconic, the second globose, the third more slender and just a little longer than the fourth, subclavate, joints 4 to 15 subequal, just a little longer than the fourth. All joints of the flagellum fluted.

Superfamily VII. *CHALCIDOIDEA.*

Family LX. AGAONIDÆ.

Genus BLASTOPHAGA, Gravenhorst.

133. *Blastophaga piceipes*, n. sp.

♀. Length 1·5 mm.; ovipositor 1½ times as long as the abdomen. Polished black, impunctured; agrees well with the *B. schwarzii*, from Florida, except that it is nearly twice as large and the thorax entirely is black; coxæ and femora piceous; tibiæ and tarsi paler; three basal joints of antennæ rufo-testaceous; the flagellum stouter, incrassated toward tip, black, fluted, with stiff black hairs, the second joint longer than thick. Wings clear hyaline, the subcostal nervure towards base pale brownish, the radius perpendicular with the marginal and not longer than the marginal nervure; post-marginal nervure but slightly developed.

St. Vincent. Described from five ♀ specimens, collected by Herbert H. Smith; ♂ unknown.

This species is closely allied to *B. schwarzii*, found in

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South Florida, but its much larger size, darker coloured thorax, legs and abdomen, stouter antennæ, and perpendicular radius, sufficiently differentiate the two.

### 134. *Blastophaga insularis*, n. sp.

♀. Length 1 mm. Polished black; head anteriorly and beneath, the long facial impression, thorax at sides and beneath, the legs, and the abdomen, except dorsally from the second segment, pale brownish-yellow or honey-yellow. It also agrees with *B. schwarzii* in general appearance, but besides its paler colour, it can be readily distinguished from it and from *B. piceipes* by the following antennal differences: The scape is strongly dilated and subtriangularly produced at the middle beneath; the fourth joint and not the third is produced outwardly at apex into a spine-like process, the four following joints being slender, cylindrical, while the last four are enlarged and form a club, the joints of which are wider than long, and beset with stiff bristles.

St. Vincent. Described from sixteen ♀ specimens, collected by Herbert H. Smith; ♂ unknown.

## Genus TETRAPUS, Mayr.

### 135. *Tetrapus antillarum*, n. sp.

♀. Length 2·5 mm.; ovipositor about the length of the abdomen. Polished black, impunctate; head beneath the eyes and anteriorly beyond the insertion of the antennæ, but not above the antennæ and beneath wholly, flavo-testaceous; scape, pedicel and ring-joint, the tegulæ, the pro- and meso-notum, metapleura, legs and venter brownish-yellow; flagellum brown, scarcely longer than the scape pedicel and ring-joint united, subcompressed, tapering off at apex, the joints a little wider than long. Scutellum dark rufopiceous. Mandibular saws armed with a double row of teeth, the outer row having about nine distinct teeth.

St. Vincent. Described from one ♀ specimen.

Comes very close to *T. americanus*, Mayr, specimens of which are in my collection, through the kindness of Dr. Mayr, but it is slightly larger and differently coloured, with the teeth in the mandibular appendages less numerous.

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## Family LXI. TORYMIDÆ.

### Subfamily I. *IDARNINÆ.*

### Genus IDARNES, Walker.

### 136. *Idarnes carme*, Walker.

1846. *Idarnes carme*, Walk., Ann. and Mag. Nat. Hist., xii, p. 46.

St. Vincent. Three ♀ specimens.

This species has also been bred from Fig-insects from South Florida by Mr. E. A. Schwarz. The genus is identical with *Tetragonaspis*, Mayr, as was suspected by Dr. Mayr. Walker's description of the antennæ is absolutely wrong and misleading, and Dr. Mayr cannot be blamed for not recognizing it. Prof. Westwood tells us that Walker's type is still in the British Museum but without a head.

### Genus SYCOPHILA, Walker.

### 137. *Sycophila bicolor*, n. sp.

♂ ♀. Length 1·5–2 mm.; ovipositor not quite the length of the abdomen. Brownish-yellow, feebly shagreened; flagellum dark brown; eyes and ocelli brown; abdomen black or piceous black; coxæ long, conical, the tibiæ and tarsi usually whitish. Head viewed from above transverse quadrate, a little wider than the thorax; frons with two grooves for the reception of the scape; face with two parallel impressed lines extending from the base of each antenna forward to the clypeus. Antennæ 13-jointed, with a ring-joint, inserted a little above the middle of the face, the scape slender; pedicel a little longer than thick; flagellum filiform, stout, much thicker than the scape, pubescent, the joints transverse, the first a little the longest. Prothorax subquadrate, narrowed before; mesonotum trilobed, the lateral lobes convex, much shorter than the middle lobe, the latter longer than wide anteriorly; scutellum oblong-quadrate, the axillæ convex; metathorax short, smooth. Wings hyaline, the venation pale or hyaline; the stigmal vein rather long, a little oblique or curved, and a little longer than the marginal; postmarginal not developed. Abdomen ovate or oval, not as wide as the thorax, somewhat depressed above, subcompressed or subcarinated along the venter, the hypopygium prominent, ploughshare shaped; ovipositor rather broad, narrowed at base, not quite as long as the abdomen, pubescent.

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The male agrees with the female, except that the legs are a little more slender, the head above usually dusky or brownish, sometimes wholly metallic green or blue-green, while the abdomen is much depressed, elongate ovate, fully as long, if not longer, than the thorax. The flagellar joints are widened at base, becoming narrower towards the apex, delicately fluted, the first joint being the widest.

St. Vincent, W. I., and Cocoanut Grove, South Florida. Described from six ♂ and nine ♀ specimens reared by E. A. Schwarz from *Ficus pedunculata* in South Florida, and a single ♀ from St. Vincent.

### 138. *Sycophila incerta*, n. sp.

♀. Length 2 mm.; ovipositor a little shorter than the abdomen. Brownish-yellow, feebly coriaceous; eyes and ovipositor black; ocelli red. Antennæ 13-jointed, with a ring-joint, inserted on the middle of the face; the scape half as long as the flagellum excluding the pedicel; pedicel longer than thick at tip; flagellum subclavate, the joints transverse. Prothorax rather large, narrowed in front; mesonotum with distinct furrows; scutellum oblong-quadrate, the axillæ convex; metanotum transverse. Wings hyaline, with a short marginal fringe, the venation pale or yellowish, the stigmal nervure rather long, slightly oblique, subclavate, longer than the marginal, the postmarginal nervure not developed. Abdomen broadly-oval or rotund-oval, depressed, subpetiolate, much wider than, but not quite as long as, the thorax, the segments nearly of an equal length.

The ♂ agrees with the ♀, excepting the usual sexual differences and in having the apex of the abdominal segments margined with brown.

St. Vincent, W. I., and Cocoanut Grove, South Florida. Described from one ♂ and three ♀ specimens. Two of the female specimens were reared by Mr. E. A. Schwarz from *Ficus pedunculata* in South Florida, the others were collected by H. H. Smith in St. Vincent.

## Subfamily II. *TORYMINÆ.*

## Genus SYNTOMASPIS, Förster.

### 139. *Syntomaspis punctifrons*, Ashmead.

Grenada. Smith's No. 65. One ♀ specimen.

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Subfamily III. *MONODONTOMERINÆ.*

## Genus PHYSOTHORAX, Mayr.

The rearing of some of the parasitic insects from wild figs in Florida and elsewhere shows that Dr. Mayr has confused the females of this genus with *Dimorus*, Walker. The species belonging to the true *Dimorus*, Walker, are parasitic in the nests of bees, and are quite distinct generically from similar insects associated with Fig-insects. Two distinct species have been noticed in the St. Vincent material, as follows:

### 140. *Physothorax variabilis*, Mayr.

1885. *Diomorus variabilis*, Mayr, Verh. Zool. bot. Ges. Wien, xxxv, p. 228, ♀.
1898. Dalla Torre, Cat. Hym., v, p. 291.

St. Vincent. One ♀ specimen.

### 141. *Physothorax pallidus*, n. sp.

♀. Length 1·5–2 mm.; ovipositor a little longer than the body, black. Brownish-yellow, with a slight violet reflection and with a sparse, feeble, thimble-like punctuation; flagellum and apical joints of tarsi dark brown. Wings hyaline, iridescent, the marginal nervure brownish but very long, being only a little shorter than the subcostal vein, the stigmal vein minute. Hind femora with two teeth towards apex beneath, the surface below feebly serrate. Dorsal flap of second abdominal segment emarginate at the apical middle.

♂. Length 1·25 mm. Agrees with the female, except that it is smaller, paler and less distinctly punctate; the club of antennæ, the eyes, the ocelli and teeth of mandibles brown, the club being thicker than the funicle, while the dorsal flap of the second abdominal segment is *straight*, not emarginate.

A dimorphic, wingless male also occurs, agreeing with the winged males only in colour, and in having the usual two teeth on the hind femora, but in sculpture and in the structure of antennæ, thorax and head it is quite different: It measures only ·65 mm. in length and is smooth and polished; the head is vertically oblong, the eyes being deformed, narrow and situated in a slight depression laterally; antennæ very short, not as long as the head, 6-jointed, the scape short and slender, pedicel small, one minute ring-joint and a short, stout, clavate, 3-jointed flagellum.

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St. Vincent, W. I., and Cocoanut Grove, South Florida. Described from ten ♀s, two winged ♂s and one apterous ♂, bred by Mr. E. A. Schwarz from *Ficus pedunculata* in South Florida; one ♀ specimen from St. Vincent.

## Family LXII. CHALCIDIDÆ.

### Genus SPILOCHALCIS, Thomson.

142. *Spilochalcis fulvescens*, Walker.

Grenada. One ♂ specimen.

## Family LXIII. EURYTOMIDÆ.

### Genus EURYTOMA, Illiger.

143. *Eurytoma Howardi*, Dalla Torre (*E. mayri*, How.).

Grenada, No. 65. Four specimens.

## Family LXIV. PERILAMPIDÆ.

## Family LXV. EUCHARIDÆ.

### Genus KAPALA, Cameron.

144. *Kapala furcata*, Fabr.

Grenada. Two specimens.

## Family LXVI. MISCOGASTERIDÆ.

### Subfamily I. *PIRENINÆ.*

### Genus HERBERTIA, Howard.

145. *Herbertia lucens*, Howard.

Grenada. One ♀ specimen.

### Genus EROTOLEPSIA, Howard.

### Subfamily II. *TRIDYMINÆ.*

### Genus TRIDYMUS, Ratzeburg.

(*Hemitrichus*, Thomson.)

### Subfamily III. *MISCOGASTERINÆ.*

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Subfamily IV. *LELAPINÆ.*

Genus LELAPS, Haliday.

146. *Lelaps pulchricornis*, Haliday.

Grenada—Balthazar, Grand Etang, Chantilly Estate. Several specimens.

147. *Lelaps fulvescens*, Ashmead.

Grenada—Balthazar, Mirabeau Estate. Several specimens.

## Family LXVII. CLEONYMIDÆ.

Subfamily I. *CHALCEDECTINÆ.*

Genus EUCHRYSIA, Westwood.

148. *Euchrysia Busckii*, n. sp.

♀. Length 4·5–6 mm. Head and thorax mostly blue, the face and cheeks and sometimes the temples, with a more or less decided metallic greenish tinge; scutellum, metathorax, abdomen above, more or less, and most of the legs, except the coxæ, trochanters and tarsi, bright, golden green; basal joint of all the coxæ white, rest of tarsi fuscous; coxæ and trochanters blue, the hind coxæ metallic beneath.

Porto Rico. Described from two ♀ specimens taken by Mr. August Busck, February 1899.

Subfamily II. *CLEONYMINÆ.*

Genus ACROCORMUS, Förster.

149. *Acrocormus megastigmus*, Ashmead.

♀. Length 3·8 mm. Agrees well with the ♂, which was described from St. Vincent, except in antennal and abdominal characters. The flagellum is brown-black, pubescent, the funicle 6-jointed, all longer than thick, except the sixth which is quadrate or not longer than wide; the club stouter, fusiform, 3-jointed; the abdomen is elongate, acuminate, longer than the head and thorax united, flat above, compressed beneath, with a strong triangular keel at base; legs, except the hind coxæ, brownish-yellow.

Grenada—Grand Etang (Leeward side), 1900 feet. Described from one ♀ specimen.

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Subfamily III. *PELECINELLINÆ.*

None.

Subfamily IV. *COLOTRECHNINÆ.*

None.

## Family LXVIII. ENCYRTIDÆ.

Subfamily I. *EUPELMINÆ.*

For distinguishing the genera of this subfamily see my paper "On the genera of the *Eupelminæ*," published in Proc. Ent. Soc. Wash., IV, 1886, pp. 4—20.

### Genus METAPELMA, Westwood.

#### 150. *Metapelma cubensis*, n. sp.

♀. Length 4 mm.; ovipositor longer than the abdomen. Golden-green; body beneath bluish-green; axillæ and metanotum blue. Antennæ black. Face with thimble-like punctures. Legs, except coxæ, fulvous, middle tibiæ towards apex, hind femora at apex, hind tibiæ, except a white annulus at base, and the tarsi fuscous; middle tarsi, except basal joint which is white, also fuscous. Wings hyaline, with two faint dusky clouds. Abdomen æneous-black, the basal segment cupreous or brassy; ovipositor black.

Cuba. Described from two ♀ specimens.

### Genus CALOSOTER, Walker.

#### 151. *Calosoter chrysideus*, n. sp.

♂. Length 2 mm. Bronzed-green, the head and thorax above coarsely reticulated, the mesonotum more or less gold-green. Antennæ black, the scape and pedicel metallic. Legs, except the trochanters, knees, tips of tibiæ and tarsi, which are pale or whitish, æneous. Wings hyaline, the marginal vein very long, only a little shorter than the submarginal, the stigmal vein short, curved, the postmarginal vein very long. The head is transverse, the face pubescent, with a median ridge or carina, the scrobes deep. The antennæ are inserted rather close together with a carina between. Mouth parts piceous. Thorax short, the mesonotum being wider than long, with two slight impressions posteriorly conforming to the axillar furrows; scutellum posteriorly subtruncate, the middle lobe not pointed at base; metathorax short, smooth, with a delicate median carina, the spiracles rounded. The abdomen is clavate, subcompressed, as long as the thorax, and of an æneous-black colour.

St. Vincent. Described from two ♂ specimens.

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## Genus IDOLEUPELMUS, Ashmead.

### 152. *Idoleupelmus annulicornis*, Ashmead.

1896. *Idoleupelmus annulicornis*, Ashm., Proc. Ent. Soc. Wash., IV, p. 13, ♀.

St. Vincent. One ♀ specimen.

## Genus ISCHNOPSIS, Ashmead.

### 153. *Ischnopsis ophthalmica*, Ashmead.

1896. *Ischnopsis ophthalmica*, Ashm., Proc. Ent. Soc. Wash., IV, p. 16, ♀.

St. Vincent. One ♀ specimen.

## Genus EUPELMUS, Dalman.

Six distinct species falling into this genus, as now restricted, have been recognized, distinguishable with the aid of the following table.

### TABLE OF SPECIES.

Wings hyaline . . . . . 2

Wings marked with fuscous, or banded.

Cupreous; upper part of head sometimes bluish; wings fuscous, pale at base, with two oval, oblique, white spots on disk just behind the stigmal vein; basal two-thirds of ovipositor yellow; legs pale yellowish; coxæ and femora metallic or embrowned . . . . . (1) *E. albomaculatus*, n. sp.

2. Head and thorax blue, but above æneous-black to green; hind margin of mesopleura, metapleura and abdomen cupreous; legs, except coxæ, pale ferruginous, the hind femora toward tips bronzed, the tip of hind tibiæ and their tarsi, except basal joint, fuscous. ♀. . . . . (2) *E. reticulatus*, Howard.

Bronzed green; pronotum blue; legs, except hind coxæ, pale brownish-yellow; ovipositor with a broad yellowish band at the middle. ♀. . . . . (3) *E. cyaneicollis*, n. sp.

Dark cupreous; head behind and mesopleura blue-black; abdomen piceous, the dorsum blackish, paler at base, at apex and along the venter; legs, except hind coxæ *at base*, and the scape of the antennæ wholly pale brownish-yellow. (4) *E. pallidipes*, n. sp.

Head, collar and abdomen cupreous; thorax æneous-black, the mesopleura blue-black; legs brownish-yellow, the femora,

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except tips, black or fuscous, the anterior and middle tibiæ narrowly annulated with fuscous. . (5) *E. cupreicollis*, n. sp.

Æneous-black or sub-metallic, the temples and mesopleura with a bluish tinge; legs yellowish-white, the femora and tibiæ with a brownish spot; antennæ black, the scape æneous; abdomen elongated, pointed at apex, much longer than the head and thorax united, the ovipositor subexserted. ♀. (6) *E. sulcatus*, n. sp.

### 154. *Eupelmus albomaculatus*, n. sp.

♀. Length 2·5 mm.; ovipositor 5 mm. Cupreous; face between antennæ and the vertex bluish, the former below the antennæ clothed with a sparse silvery pubescence. Legs pale yellowish, the trochanters, all the tarsi and the hind tibiæ whitish, the hind coxæ metallic, the hind femora, except basally, embrowned, sub-metallic in certain lights. Wings fuscous, the basal third or nearly hyaline, the apical two-thirds fuscous, with two oval, oblique, white spots on the disk behind and below the stigmal vein; marginal vein very long, longer than the submarginal; stigmal vein clavate, shorter than the postmarginal. Antennæ slender, subclavate, black, the scape and pedicel metallic; the funicle joints are more than twice longer than thick, subequal, the club being much thicker than the last joint of the funicle. Thorax smooth, impunctate; the pronotum is triangular, narrowed anteriorly, with a median grooved line above; the mesonotum is twice as long as wide, deeply impressed but with a convexly elevated triangular prominence or lobe anteriorly, the parapsides carinate, the scutellum (including the axillæ or lateral lobes) is closely and finely punctate, contrasting greatly with the smooth mesonotum, the middle lobe pointed at base, the axillæ or lateral lobes almost meeting at its base. The metapleura and the hind coxæ are clothed with a silvery pile. Abdomen clavate, as long as the head and thorax united, compressed along the venter; ovipositor at base for two-thirds its length yellowish, the apical third, except the extreme apex which is tipped with white, black.

St. Vincent. Described from two ♀ specimens.

### 155. *Eupelmus cyaneicollis*, n. sp.

♀. Length 2·1 mm. Bronze-green, shagreened, the pronotum blue or violaceous; scape beneath and mandibles, except teeth, reddish; flagellum subclavate, black; legs, except hind coxæ, brownish-yellow, the hind femora medially and their tibiæ medially more or less obfuscated; wings hyaline, pubescent; tegulæ submetallic; the venation pale brown, the marginal vein very long, a little longer

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than the submarginal, the stigmal and postmarginal equal in length, the former gently curved. Abdomen pointed, compressed and triangularly carinated beneath, the ovipositor less than half the length of the abdomen, black, with a broad yellowish-white band at the middle, extending from basal fourth to the middle.

St. Vincent. Described from a single ♀ specimen.

156. *Eupelmus pallidipes*, n. sp.

♀. Length 2·5 mm. Cupreous, impunctate; head posteriorly and the mesopleura bluish-black; abdomen brownish-piceous, with the dorsum, except base and apex, and the venter paler; scape, pedicel beneath and legs, except a spot at base of hind coxæ, brownish-yellow; flagellum subclavate, black or brown-black. Wings hyaline, the venation brownish, the marginal vein extremely long being twice the length of the submarginal, the stigmal vein clavate, slightly curved, the postmarginal long, acuminate, nearly thrice as long as the stigma. The scape is somewhat stout, obclavate, and extends to the ocelli; the pronotum is triangular, convex above; mesonotum longer than wide, impressed posteriorly, the anterior prominence convex and extending posteriorly to half the length of the mesonotum, while the parapsides are convexly rounded. Abdomen elongate-oval, as long as the thorax, with a prominent black pubescent ovipositor that is less than half the length of the abdomen.

St. Vincent. Described from two ♀ specimens.

157. *Eupelmus cupreicollis*, n. sp.

♀. Length 2·5 mm.; ovipositor black, half the length of the abdomen. Stature of *E. pallidipes;* head, pronotum, disk of mesonotum and more or less of the abdomen, especially above, cupreous; thorax otherwise, except mesopleura, æneous-black, the anterior prominence of mesonotum extending only to one-third its length, the mesopleura dark bluish. Wings as in *E. pallidipes.* Legs pale yellowish, the hind coxæ cupreous, all femora, except tips, embrowned or fuscous, the anterior and middle tibiæ with a black or fuscous annulus a little beyond the base.

St. Vincent. Described from a single ♀ specimen.

158. *Eupelmus sulcatus*, n. sp.

♀. Length 2·5 mm.; elongate, slender, æneous-black or submetallic; head metallic greenish; temples and mesopleura bluish, the mesosternum with a long broad sulcus. Antennæ black, the

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scape æneous, the flagellum clavate; pedicel long; funicle joints, after the first, transverse; club fully twice as wide as the stoutest joint of funicle. Legs pallid yellow or yellowish-white, the anterior coxæ basally and the posterior coxæ metallic, their femora and tibiæ with a brownish cloud. Abdomen acuminate, much longer than the head and thorax together, sub-compressed, with the ovipositor very short, scarcely exserted, its extreme tip yellowish or whitish.

St. Vincent. Described from one ♀ specimen.

## Genus ANASTATUS, Motschulsky.

### TABLE OF SPECIES.

Thorax piceous-brown, with metallic reflections; head metallic or gold-green; abdomen æneous, with a large white spot at base beneath; scape, pedicel, two last funicle joints and club yellowish-white; wings fuliginous except at base, and two oblique white spots on disk one of which reaches the marginal edge, the other the hind margin . . (1) *A. alboclavus*, n. sp.

Thorax and legs brownish-yellow; head golden-green; abdomen cyaneous, with a band at base and extreme tip white, the band above with two brown spots at base; wings fuliginous, with the basal one-third and a curved band below the apex of marginal vein white. . . . . (2) *A. aurifrons*, n. sp.

### 159. *Anastatus alboclavus*, n. sp.

♀. Length 2·5 mm.; ovipositor not exserted. Stature resembles *Eupelmus albomaculatus*; the thorax smooth, rufo- or brownish-piceous, with metallic reflections. Head metallic or gold-green, finely shagreened. Scutellum, including axillæ, shagreened, contrasting with the smooth mesonotum. Antennæ, except the scape, the pedicel, the last joint of the funicle and the club, which are pale yellowish-white, brown-black; the scape is long and slender and extends far above the ocelli; flagellum subclavate. The abdomen is shorter than the thorax, widened behind, and of an æneous-black colour, except the two or three basal segments which are white or pale yellowish. Legs brownish, the trochanters, anterior tibiæ, all tarsi, and base and apex of hind tibiæ pale yellowish or whitish. Wings as in *Eupelmus albomaculatus*.

St. Vincent. Described from a single ♀ specimen.

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### 160. *Anastatus aurifrons*, n. sp.

♀. Length 5 mm. Head gold-green, punctate or coarsely shagreened, pubescent, the eyes large, whitish, convergent above. Thorax, legs, mouth parts and scape brownish-yellow; flagellum black. The abdomen, except the two basal segments, blue or blue-black; two basal segments, the short, subexserted ovipositor and all the trochanters white. Wings fuscous, the basal third hyaline, while across the disk from the stigmal vein is a curved white band. Antennæ subclavate, obliquely truncate at apex, the scape long, extending above the ocelli. Mesonotum deeply impressed posteriorly with a convexly elevated lobe anteriorly, the parapsides flattened above. Abdomen clavate, sessile, about as long as the thorax, the first segment the longest, the first two segments white, the first on dorsum with two large brownish spots, with a median impression between; dorsal segments 3 to 5 about equal, black, dorsal segments 6 and 7 blue, the sixth longer than any of the others, except the first. Ovipositor subexserted, the sheaths white.

St. Vincent. Described from a single ♀ specimen.

## Genus TANAOSTIGMODES, Ashmead.

### 161. *Tanaostigmodes mayri*, n. sp.

♂. Length 0·9 mm. Brownish-yellow; a transverse line on vertex of head enclosing the ocelli, the occiput, the pronotum, the mesonotum, except broadly at sides in front of the tegulæ, the scutellum, the metanotum and the dorsum of abdomen black. Flagellum with long, sparse, black hairs, the joints 1–5 dentate or with a lobe towards one side. Thorax above shining but microscopically shagreened. Wings hyaline, pubescent, the veins pallid, the stigmal and postmarginal veins of equal length, stouter than the marginal.

Grenada—Mount Gay Estate. Described from one ♂ specimen.

## Subfamily II. *ENCYRTINÆ*.

## Tribe I. ECTROMINI.

## Genus ANAGYRUS, Howard.

In this genus should be placed the two Encyrtines described by Dr. Howard under the genus *Cerchysius*, namely *C. pulchricornis* and *C. terebrator*. Both bear a superficial resemblance to the genuine *Cerchysius*, but in

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that genus the mandibles are tridentate, while in *Anagyrus* and all the other genera falling in the tribe Euscapini, they are bidentate.

## Family LXIX. PTEROMALIDÆ.

### Subfamily I. *MERISINÆ.*

### Subfamily II. *PTEROMALINÆ.*

### Subfamily III. *SPHEGIGASTERINÆ.*

### Genus PACHYNEURON, Walker.

#### 162. *Pachyneuron laticeps*, n. sp.

♀. Length 1·1 mm. Head and thorax blue-black, finely reticulated, the abdomen æneous-black; scape of antennæ, palpi, mandibles and legs, including the coxæ, pale-yellowish; flagellum brown. Head large, very broad, with the eyes fully twice the width of the pronotum, concave behind; scape of the antennæ longer than half the length of the flagellum, slender, the pedicel about as long as the two ring-joints and the first joint of flagellum united, the latter being a little shorter and smaller than the second; the flagellum is subclavate, the joints gradually widening from the first. Wings hyaline, the veins pale-brownish, the thickened marginal vein being fully as long as the stigmal vein, or about five times as long as thick.

Grenada—Mirabeau Estate. Described from one ♀ specimen.

## Family LXX. ELASMIDÆ.

## Family LXXI. EULOPHIDÆ.

### Subfamily I. *ENTEDONINÆ.*

### Genus PEDIOBIUS, Walker (= *Ganahlia*, Dalla Torre).

To this genus belongs *Sympiesis grenadensis*, Howard, and *S. politus*, Howard, described from Grenada.

### Genus CLOSTEROCERUS, Westwood.

To this genus belongs *Entedon pulcher*, Howard, described from Grenada.



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Subfamily II. *APHELININÆ.*

Genus *Aphelinus*, Dalman.

163. *Aphelinus howardii*, n. sp.

♂. Length 0·8 mm. Brown-black, slightly paler beneath; scape, sutures between the flagellar joints and the legs honey-yellow, the middle and hind femora medially and the hind tibiæ and tarsi embrowned; middle legs rather long, the tibial spur long, white, much as in *Encyrtus*. Head on vertex and in front roughened, the eyes pubescent, the antennæ elongate but not quite the length of the body, the flagellum dark brown, the joints elongate, cylindrical and densely, finely pubescent, the first three or four well separated, subpedunculated. Wings hyaline, pubescent and strongly iridescent, the hairs and the veins brownish.

Grenada, No. 20. Described from one ♂ specimen.

Subfamily III. *TETRASTICHINÆ.*

Genus *Tetrastichus*, Haliday.

164. *Tetrastichus flavus*, n. sp.

♀. Length 1·6 mm. Wholly brownish- or honey-yellow, except the eyes and terminal joint of the tarsi which are brown; claws and teeth of mandibles black. The whole body, except the mesonotum, scutellum and metathorax, smooth and shining, impunctate; the mesonotum and scutellum microscopically aciculated but only visibly so under a high power lens; metathorax irregularly areolated from elevated lines. The scutellum has the regular grooved lines, while the usual median longitudinal grooved line on the mesonotum becomes obsolete anteriorly. Wings hyaline, pubescent, the veins pale-yellowish, the marginal vein being a little longer than the subcostal, the stigmal vein being a little shorter than half the length of the marginal.

Grenada—Balthazar (Windward side). Described from one ♀ specimen.

The antennæ are broken off in the unique specimen and cannot be described in detail.

Family LXXII. TRICHOGRAMMIDÆ.

Genus PARACENTROBIA, Howard.

165. *Paracentrobia punctata*, Howard.

Grenada. One ♀ specimen.

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## Family LXXIII. MYMARIDÆ.

### Subfamily I. *GONATOCERINÆ.*

### Genus LITUS, Haliday.

#### 166. *Litus maculipennis*, n. sp.

♂. Length 0·9 mm. Polished black; head below antennæ, mouth parts, two basal joints of antennæ, and legs, except hind tibiæ, brownish-yellow; flagellum and hind tibiæ dark brown. Head transverse, not wider than the thorax, with a frontal impression, the vertex acute. Lateral ocelli almost touching the eyes. Antennæ much longer than the body, 13-jointed, filiform, subcompressed, the scape a little shorter than the first flagellar joint, the flagellar joints nearly of an equal length, more than twice longer than wide. Thorax rounded before the pronotum, very short, not or scarcely visible from above; mesonotum twice as wide as long, with two delicate but distinct furrows; scutellum large, subconvex, separated from the mesonotum by a transverse impressed line; metathorax rounded behind, smooth. Abdomen very short, oval, sessile, about half the length of the thorax, with some sparse hairs. Wings hyaline, strongly fringed, their disks with a slight cloud and a brownish fascia across their basal third, or from the tip of the long marginal vein.

St. Vincent. Described from one ♂ specimen.

The male of the genus *Litus* has never before been described, so that I am not quite certain that this species really belongs here. In the number of antennal joints it agrees with *Gonatocerus*, Nees, but from that genus it is readily distinguished by the long marginal vein; in *Gonatocerus* the marginal vein is short.

### Subfamily II. *MYMARINÆ.*

### Genus *Polynema*, Haliday.

#### 167. *Polynema magniceps*, n. sp.

♂. Length 1 mm. Brown-black, smooth, shining; first three joints of antennæ, legs and petiole of abdomen clear yellow; body of abdomen small, pear-shaped, black. Head large, quadrate, wider than the thorax, the temples and cheeks very full, fuscate; apex of clypeus impressed, leaving a small opening between it and the mouth. Ocelli triangularly arranged, the lateral being slightly nearer to the eye than to the front ocellus. Antennæ very long, slender, filiform, much longer than the whole body, 13-jointed, the scape very short, stout, scarcely longer than thick and about the length of the first

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joint of the flagellum; all flagellar joints slender, cylindrical, and all longer than the first, except the last; pedicel small, rounded. Mesonotum with distinct parapsidal furrows and with a more or less distinct median furrow. Scutellum convex, longer than wide. Metathorax short, smooth. Wings hyaline, very long and narrowed, with very long cilia, the marginal vein short, punctiform. Legs very long, slender, the tarsi longer than their tibiæ.

St. Vincent. Described from one ♂ specimen.

### 168. *Polynema grenadensis*, n. sp.

♀. Length 1 mm. Polished black; two basal joints of antennæ, legs, except front coxæ, and petiole of abdomen yellow; flagellum and front coxæ brown. Head transverse, very little wider than the thorax, the lateral ocelli placed close to the eye margin, the pronotum distinct, the mesonotum twice as long as wide, with distinct parapsidal furrows. Wings hyaline, with long cilia, the marginal vein short, brown. Abdomen conical, ending in a prominent ovipositor, which is about as long as the basal joint of the hind tarsi; the yellow petiole is slender, a little longer than the hind coxæ.

Grenada—Mirabeau Estate (Windward side). Described from one ♀ specimen.

### 169. *Polynema albicoxa*, n. sp.

♀. Length 1 mm. Polished black, impunctate; head subquadrate, the face with two antennal grooves. Antennæ 9-jointed, pale honey-yellow, the club large, oblong, solid, black. Thorax elongate, the parapsidal furrows delicate but distinct. Wings hyaline, with a dusky cloud at the middle, the margins longly fringed, the submarginal vein not attaining the costa. Legs honey-yellow, the coxæ white, the posterior femora embrowned. Abdomen elongate, pointed at apex, polished black, the petiole yellow, the ovipositor exserted as long as the club of the antennæ.

St. Vincent. Described from 1 ♀ specimen.

The colour of the antennæ and legs, and the shorter ovipositor, easily separate the species from *P. grenadensis*. The above four species are the only ones so far noticed in the West Indies, although the family must be well represented in all countries of the globe. Their minute size and the difficulty of securing these delicate and fragile insects probably accounts for their apparent absence in all the collections brought home from foreign shores.

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Superfamily VIII. *ICHNEUMONOIDEA.*

## Family LXXIV. EVANIIDÆ.

### Genus EVANIA, Fabricius.

170. *Evania appendigaster*, Linné.

Grenada—St. George's (Leeward side). One ♂ specimen.

## Family LXXV. AGRIOTYPIDÆ.

This family is represented by a single species found in Europe. I have not the least doubt, however, but that when more attention is given to breeding Neuropteroid insects, additional new species and genera will be discovered.

## Family LXXVI. ICHNEUMONIDÆ.

Subfamily I. *ICHNEUMONINÆ.*

It is somewhat singular that not a single representative of this group has been taken in either St. Vincent or Grenada, although many species are recorded from Cuba and other of the West Indian Islands.

Subfamily II. *CRYPTINÆ.*

Tribe II. PHYGADEUONINI.

### Genus STIBOSCOPUS, Förster.

171. *Stiboscopus thoracicus*, n. sp.

♀. Length 2·5–3 mm.; ovipositor scarcely half the length of the abdomen. Head, mesosternum and metathorax black; prothorax, epipleura, mesonotum and scutellum coral red; antennæ, mandibles and abdomen honey-yellow; legs pale yellowish or somewhat whitish, especially the coxæ and trochanters; wings hyaline, the stigma and veins pale, the areolet open behind. Head transverse, polished, shining, except the face below the antennæ which is finely punctate and sparsely pubescent. Mesonotum shagreened posteriorly in front of scutellum, delicately transversely rugulose; scutellum polished, convex; metathorax completely areolated, the surface shining but sparsely punctate. Abdomen polished, impunctate, the sutures 2 and 3 blackish.

The ♂ agrees with the ♀, except that the pronotum and the

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mesonotum alone are red, while the abdomen, except the apex of the petiole and the second abdominal segment, is black.

Grenada—Balthazar, Grand Etang, Mount Gay Estate. Described from one ♂ and three ♀ specimens.

### 172. *Stiboscopus grenadensis*, n. sp.

♂. Length 2 mm. Polished black, the second abdominal segment reddish at base; first two or three joints of antennæ yellow, the following brownish; mandibles reddish; legs yellowish, the hind coxæ, femora and tibiæ embrowned, the latter thickened, clavate, with a pale annulus at base and at middle. Wings hyaline, the stigma and veins pale yellowish.

Grenada—Balthazar and Grand Etang. Described from two ♂ specimens.

## Genus Apsilops, Förster.

To this genus belongs *Diaglypta radiata*, Ashmead.

## Tribe III. MESOSTENINI.

## Genus Mesostenus, Gravenhorst.

### 173. *Mesostenus grenadensis*, n. sp.

Agrees in every respect with *M. insularis*, Ashm., described from St. Vincent, only the hind coxæ are black, with a white spot; the first joint of trochanters of middle and hind legs and base of petiole and the second abdominal segment basally are black; the hind tibiæ and tarsi, except joints 2 and 3, are fuscous or black, while the apex of the petiole and more or less of the apex of the second, especially laterally, are white. The middle lobe of mesonotum posteriorly or just in front of the scutellum is longitudinally aciculated.

Grenada—Balthazar, Mount Gay Estate, Granville. Described from six ♀ specimens.

## Subfamily III. *PIMPLINÆ*.

## Tribe II. LABENINI.

## Genus Labena, Cresson.

### 174. *Labena trilineata*, Ashmead.

Grenada. Another ♂ specimen of this species, described originally from a unique, is labelled St. George's (Leeward side).

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### Tribe III. LISSONOTINI.

### Genus ASPHRAGIS, Förster.

#### 175. *Asphragis bilineata*, n. sp.

♀. Length 6 mm. Head and thorax lemon-yellow, marked with black as follows: a large spot on vertex enclosing ocelli and extending to base of antennæ, a black line on each lobe of the mesonotum, or where the lobes would be if the parapsidal furrows were defined, a small spot just beneath anterior tegulæ, a dusky spot just above the femoral furrow on the mesopleura posteriorly, and a blackish spot on disk of metanotum. The legs are yellowish but the hind coxæ have a spot at middle outwardly, while the first joint of the hind trochanters, extreme base and apex of their femora, the apex of their tibiæ and their tarsi, except first joint basally, are fuscous. The disks of all the abdominal segments are more or less marked with fuscous, the ovipositor being as long as the abdomen. Wings hyaline, the stigma brown, the areolet entirely wanting. Claws pectinate.

Grenada—Mount Gay Estate. Described from one ♀ specimen.

### Tribe IV. PIMPLINI.

### Genus PIMPLA, Gravenhorst.

#### 176. *Pimpla marginella*, Brullé.

The U.S. National Museum possesses three ♂ specimens of this species from Fox's Collection, collected at Jamaica, and labelled *Hemiteles incerta*, Cress. It has no relation whatever to *H. incerta*, Cress., the types of which I have examined in the Academy of Sciences, in Philadelphia.

### Subfamily IV. *TRYPHONINÆ.*

### Genus NEURATELES, Ratzeburg.

#### 177. *Neurateles* (*Orthocentrus*) *variabilis*, Ashmead.

St. Vincent.

#### 178. *Neurateles meridionalis*, n. sp.

♀. Length 3 mm. Polished black; anterior orbits, face below antennæ, antennæ except towards tips, and legs pale yellowish, the hind femora and tips of their tibiæ darker; palpi and venter whitish. Scape stout, as long as the pedicel and first joint of flagellum united, flagellar joints gradually shortening, from 12 to beyond not wider

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than long, the first the longest joint, about four times as long as thick. Wings hyaline, the stigma and veins light brownish, the areolet wanting. Abdomen compressed from second segment, the first joint aciculated, a little longer than the second, the second with an oblique furrow on either side at base.

Grenada—Grand Etang. Described from two ♀ specimens.

Subfamily V. *OPHIONINÆ.*

Tribe II. OPHIONINI.

Genus THYREODON, Brullé.

179. *Thyreodon grenadensis*, n. sp.

♀. Length 3·4 mm. Head, thorax, two basal joints of antennæ and four anterior legs, except their tarsi and the hind coxæ, ferruginous; eyes, flagellum of antennæ, hind legs, except coxæ, and abdomen black. Wings hyaline, with a smoky cloud at basal third enclosing the apex of the submarginal cell and basal vein, and another enclosing the marginal cell, except a small space at base.

Grenada—Balthazar. Described from one ♀ specimen.

Genus ENICOSPILUS, Curtis.

180. *Enicospilus cubensis*, Norton.

1863. *Ophion cubensis*, Norton, Proc. Ent. Soc. Phil., i, p. 358, ♀.
*Ophion mauritii*, Sauss. (?)
1891. *Ophion flavus*, Fox *nec* Fabr., Tr. Am. Ent. Soc., xviii, p. 338.

Grenada—Balthazar, Granville. Many specimens of both sexes.

181. *Enicospilus flavus*, Fabricius.

1775. *Ichneumon flavus*, Fabr., Ent. Syst., ii, p. 179.
1792. *Ophion flavus*, Fabr., Ent. Syst., Supp., p. 236.
1804. Fabr., Syst. Piez., p. 131.

Grenada—Balthazar, Mirabeau Estate; St. Vincent—Kingstown. Many specimens representing both sexes.

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182. *Enicospilus concolor*, Cresson.

1864. *Ophion concolor*, Cress., Proc. Ent. Soc. Phil., iv, p. 56.

Grenada—Balthazar. Many specimens.

*Ophion thoracicus*, Cr., should also be placed in this genus.

Tribe III. NOTOTRACHINI.

Genus NOTOTRACHYS, Marshall.

183. *Nototrachys minimus*, Ashmead.

Grenada—Grand Etang (Windward side), 1900 feet. One ♂ specimen.

*Nototrachys niger*, Ashmead.

Grenada—Mirabeau Estate (Windward side). One ♂ specimen.

Tribe IV. ANOMALINI.

Genus EIPHOSOMA, Cresson.

184. *Eiphosoma annulata*, Cresson.

Grenada—Mount Gay Estate (Leeward side). Two ♀ specimens.

Genus AGRYPON, Förster.

185. *Agrypon flavopictus*, n. sp.

♂. Length 6·5–7·5 mm. Lemon-yellow and black; head, except a large black spot on occiput and extending forward to base of antennæ, enclosing the ocelli, lemon-yellow; flagellum black, two basal joints of antennæ beneath lemon-yellow, above rufous; mesonotum, except two small spots on disk, fovea at base of scutellum and the suture surrounding scutellum, base of metathorax and a spot on posterior face, black; a transverse line on pronotum above and the mesopleura, except two large glabrous yellow spots and a minute yellow spot, and the mesosternum b'ack; abdomen ferruginous, the segments with some fuscous or blackish streaks on segments above, the petiole yellowish towards base; four anterior legs and the hind coxæ lemon-yellow, the hind coxæ with a large irregular black spot; hind trochanters with a fuscous streak

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above, their femora ferruginous, with a blackish spot at extreme tips, their tibiæ, except towards base, and their tarsi fuscous. Wings clear hyaline, the stigma and veins brown-black.

Grenada—Mount Gay Estate (Leeward side). Described from three ♂ specimens. One specimen has the yellow colour changed to red by the cyanide.

## Tribe V. CAMPOPLEGINI.

### Genus CHAROPS, Holmgren.

#### 186. *Charops unicinctus*, n. sp.

♀. Length 6·5 mm. Opaque black, closely, finely punctate, the face, cheeks, sides of thorax more or less, and the metathorax clothed with a glittering white pubescence; scape, mandibles, tegulæ, apex of front coxæ, front legs, middle trochanters, apex of middle femora, their tibiæ and tarsi (more or less), hind trochanters, and a broad annulus on the hind tibiæ with their spurs yellow; otherwise the hind legs are black. The abdomen, except the second segment on each side at base where there is a small yellowish spot, and the third segment which has a yellow band at base, is black. Wings hyaline, the narrow stigma and veins being black or blackish. The eyes are submarginate within opposite the insertion of the antennæ, while the claws are pectinate.

Grenada—Mount Gay Estate (Leeward side). Described from one ♀ specimen.

Allied to *C. bimacula*, Ashmead, and possibly the opposite sex of that species.

## Tribe VI. PANISCINI.

### Genus PANISCUS, Gravenhorst.

#### 187. *Paniscus rufus*, Brullé.

1846. *Paniscus rufus*, Brullé, Hist. Nat. des Ins., iv, p. 155.

Grenada—Balthazar (Windward side). Eight ♀ and five ♂ specimens.

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## Tribe VIII. MESOCHORINI.

### Genus MESOCHORUS, Gravenhorst.

#### 188. *Mesochorus grenadensis*, n. sp.

♂. Length 1·5 mm. Honey-yellow, the tip of abdomen black or fuscous; eyes purplish-black; ocelli placed on a small black spot; legs very pale yellowish, the coxæ and trochanters whitish. Wings hyaline, the stigma and veins pallid; antennæ much longer than the body, faintly dusky towards tips.

Grenada—Balthazar (Windward side). Described from four ♂ specimens.

## Tribe IX. PORIZONINI.

### Genus THERSILOCHUS, Holmgren.

#### 189. *Thersilochus dorsalis*, n. sp.

♀. Length 3·8 mm. Mostly black, coriaceous, opaque; head, except the occiput and a large spot on vertex enclosing the ocelli, the basal four joints of antennæ, prosternum, a longitudinal band on the mesopleura, tegulæ, the abdomen beneath and bands at apex of the second, third and fourth dorsal segments honey-yellow; the hind legs, a band at base and apex of tibiæ, and their tarsi fuscous. Antennæ 22-jointed, the last ten joints not longer than thick, the third joint the longest, nearly five times as long as thick, the following to the 13th joint gradually shortening. Thorax without parapsidal furrows. Metanotum biareolated, the areas posteriorly obliterated or wanting. Wings hyaline, the stigma and areolet brown.

St. Vincent. Described from 1 ♀ specimen.

### Genus INSURGUS, Förster.

#### 190. *Insurgus nigriceps*, n. sp.

♀. Length 2·2 mm. Head smooth, black; clypeus, mandibles, two basal joints of antennæ, thorax, except the mesonotum, legs and abdomen honey-yellow; sheaths of ovipositor the length of the petiole, black; mesonotum and flagellum fuscous or black. The antennæ are 17-jointed, the third joint is scarcely twice as long as thick at apex and shorter than the thickened scape or first joint; joints of flagellum to the last gradually shortening, the last a little longer than the penultimate. Thorax smooth, impunctate, without parapsidal furrows, the metathorax areolate. Wings hyaline, the

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large, broad stigma and veins dark brown. Abdomen strongly compressed, scarcely longer than the head and thorax united, with a long petiole, the petiole being as long as the hind trochanters and femora united.

St. Vincent. Described from two ♀ specimens.

## Family LXXVII. ALYSIIDÆ.

### Genus APHÆRETA, Förster.

191. *Aphæreta apicalis*, Ashmead.

Grenada—Balthazar. An additional ♀ specimen.

## Family LXXVIII. BRACONIDÆ.

### Subfamily I. *APHIDIINÆ.*

### Genus LYSIPHLEBUS, Förster.

192. *Lysiphlebus meridionalis*, Ashmead.

Grenada—Grand Etang, Mirabeau Estate, Balthazar, Windsor. Four ♀ and ten ♂ specimens.

### Subfamily V. *MACROCENTRINÆ.*

### Genus MACROCENTRUS, Curtis.

193. *Macrocentrus delicatus*, Cresson.

Grenada—Balthazar. One ♂ and two ♀ specimens.

### Subfamily VII. *BLACINÆ.*

### Genus BLACUS, Nees.

194. *Blacus rubriceps*, Ashmead.

Grenada—Mirabeau Estate. One ♂ specimen.

### Subfamily IX. *CHELONINÆ.*

### Genus PHANEROTOMA, Wesmael.

195. *Phanerotoma fuscovaria*, Ashmead.

Grenada—Balthazar, Mount Gay Estate. Many specimens.

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Subfamily X. *AGATHIDINÆ.*

Genus CREMNOPS, Förster.

196. *Cremnops* (*Agathis*) *pectoralis*, Ashmead.

Grenada—Balthazar (Windward side). One ♀ specimen.

Genus AGATHIS, Latreille.

197. *Agathis rubricinctus*, Ashmead.

Grenada. One ♀ specimen.

Genus MICRODUS, Nees.

198. *Microdus varipes*, Cresson.

Grenada—Balthazar, Mount Gay Estate. ♂ ♀, twelve specimens.

199. *Microdus insularis*, Ashmead.

Grenada—Mount Gay Estate. Two ♀ specimens.

Subfamily XI. *CARDIOCHILINÆ.*

Genus CARDIOCHILES, Nees.

(= *Toxoneuron*, Say).

200. *Cardiochiles* (*Toxoneura*) *atricornis*, Ashmead.

Grenada—Balthazar, Mount Gay Estate. Fourteen specimens.

Subfamily XII. *MICROGASTERINÆ.*

Genus CŒLOTHORAX, Ashmead.

1898. *Cœlothorax*, Ashm., Proc. Ent. Soc. Wash., iv, p. 165.

Head transverse, slightly emarginate posteriorly, the occiput not margined. Maxillary palpi 5-jointed. Antennæ filiform, 24-jointed. Parapsidal furrows wanting, the disk of the mesonotum with a rounded fovea or depression. Scutellum with a smooth furrow along each side and a crenate furrow across the base. Metathorax subquadrate, exareolated. Mesopleura with a furrow below the middle. Front wings with only two basal cells, the other cells entirely wanting, the stigma large, ovate. Hind legs much longer and stouter than the anterior and middle pairs, their coxæ very long, the tarsi stout, longer than their tibiæ, the tibial spurs very

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long. Abdomen sessile, as long as the thorax, composed of five segments, the last very minute, the first as long as the second and third united, finely striate and without a distinct plate, the second and third equal, smooth and shining; ovipositor two-thirds the length of the abdomen.

This is a very aberrant genus, widely distinct from any other genus placed with the Microgasterinæ, and exhibits some affinities with the Agathidinæ. In having the median and submedian cells in the front wings equal it agrees more closely with the Agathidinæ, but on account of the absence of the mesonotal furrows, radial cell and the areolet I have placed it with this subfamily rather than with the *Agathidinæ*.

### 201. *Cœlothorax læviceps*, n. sp.

♀. Length 2·5 mm.; ovipositor about two-thirds the length of the abdomen. Black, shining, sparsely covered with a whitish pubescence. Head polished, impunctate. Palpi yellow. Antennæ 24-jointed, black, the pedicel yellowish at tip. Thorax microscopically punctate, without furrows but with a rounded fovea on disk. Pronotum impressed at sides. Mesopleura with a long, broad furrow extending to base of middle coxæ, very faintly punctate, shining. Metathorax subquadrate, not sloping off posteriorily, its dorsum being on the same plane with the abdomen, closely, finely punctate but not areolated or carinated. Wings hyaline, the venation brown; the median and submedian cells are equal in length; all other cells entirely wanting; the stigma is large, ovate, with a stump before its middle, being all that remains of the first abscissa of the radius. Anterior and middle legs, including coxæ, yellow; posterior legs brown, the base of their coxæ black, their apices and the first joint of the trochanters yellow; tarsi stout, with the first joint twice as long as the second. Abdomen sublinear, 5-jointed, polished, the first segment longitudinally striated.

St. Vincent. Described from a single ♀ specimen.

## Genus Apanteles, Förster.

The West Indian species falling into this genus, known to me, may be tabulated as follows:

### TABLE OF SPECIES.

Plate of first abdominal segment more than twice longer than wide, narrowed posteriorly, usually smooth, rarely sculptured . 3

Plate of first abdominal segment trapezoidal, narrowed anteriorly.

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Plate of first abdominal segment two or more times longer than wide at apex. . . . . 2

Plate of first abdominal segment less than twice as long as wide at apex.

First, second and third segments, more or less, sculptured.

Abdomen beneath, or at least the basal half, and legs brownish-yellow, a spot at tip of hind femora, tip of hind tibiæ and their tarsi fuscous. . . . . (1) *A. grenadensis*, n. sp.

First and second segments alone sculptured or punctate.

First and second segments striate or rugulose; abdomen above black, beneath and along the lateral edges of dorsum brownish-yellow; legs yellowish, the hind coxæ more or less, or basally, a small spot at apex of hind femora, apex of the tibiæ and their tarsi fuscous. . . . (2) *A. marginiventris*, Cresson.

First and second segments sparsely punctate, the second almost smooth.

Abdomen brownish-yellow, the disks of the dorsal segments more or less fuscous or wholly black, the plate of the first segment always black or fuscous; legs brownish-yellow, tips of hind femora and tibiæ and their tarsi fuscous; thorax entirely black. . . . . (3) *A. americanus*, Lepeletier.

Abdomen wholly brownish or honey-yellow; legs as in *A. americanus*, Lepel.; thorax not entirely black, the mesopleura always yellowish. . . . . (4) *A. flaviventris*, Cresson.

2. First segment sparsely punctate, the second smooth, with two oblique furrows at base, and longer than the third.

Head and metathorax black, rest of thorax, the abdomen and the legs brownish-yellow, the apical third or more of hind femora, their tibiæ, except a broad annulus at base, and hind tarsi fuscous. ♂ . . . . . (5) *A. iridescens*, Cresson.

3. All coxæ yellow. . . . . .

Hind coxæ alone black . . . . . 4

All coxæ black.

Second abdominal segment shorter than the third, with two oblique furrows.

Abdomen smooth, mostly black, with ventral segments 1–3 and the lateral margins of the same dorsal segments brownish-yellow; legs brownish-yellow; tips of hind femora, tips of hind tibiæ and their tarsi fuscous; palpi white. ♂.

(6) *A. herbertii*, n. sp.

Abdomen with the plate of the first segment finely sculptured, or at least alutaceous, black; ventral segments 1 to 3 and legs yellowish; a spot at apex of hind femora, tips of hind tibiæ and their tarsi fuscous.

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Head and thorax polished, impunctate; hind coxæ wholly black. ♂. . . . . (7) *A. sordidus*, n. sp.

Head and thorax closely punctate, opaque; hind coxæ pale at apex. ♂. . . . . (8) *A. sancti-vincenti*, n. sp.

Abdomen polished, impunctate, with the first segment entirely, and the ventral segments 1–4, including the membranous lateral margins of dorsal segments, yellow; most of hind femora, apical third of hind tibiæ and their tarsi fuscous or black. . . . . (9) *A. xanthaspis*, n. sp.

*Apanteles marginiventris*, Cr., *A. americanus*, Lepel., *A. flaviventris*, and *A. iridescens*, Cr., were described under the genus *Microgaster*.

### 202. *Apanteles grenadensis*, n. sp.

♀. Length 2–2·2 mm. Black, closely, finely punctate, opaque; mandibles piceous or dark rufous; palpi white; antennæ black, the flagellum brownish beneath; legs, except hind coxæ, brownish-yellow, tips of hind femora and the hind tarsi, more or less, from apex of first joint fuscous; abdomen black, the venter and the lateral margins of dorsal segments 1–5, and sometimes the sutures 2 and 3, brownish-yellow. Wings hyaline, the stigma and costa brown. The head in front of the ocelli to base of the antennæ is smooth, shining, the temples being feebly and rather sparsely punctate, while the face is closely punctate; clypeus transverse, distinctly separated, shining; labrum slightly visible as a honey-yellow lunula. Thorax above, including the scutellum, closely punctate, opaque, the mesopleura anteriorly and the mesopectus distinctly punctate, the mesopleura posteriorly, however, and extending upwards to the insertion of the hind wings are smooth and polished, with a deep femoral furrow which is roughened at the bottom; metathorax rugose, with a median carina. Abdominal segments 1 and 2 rugulose, the third at base more or less sculptured or irregularly punctate; the plate of the first segment is trapezoidal, about 1½ times as long as wide at apex; segments 2–3 subequal.

The ♂ agrees with the ♀, except that the antennæ are a little longer and wholly black, the flagellum not paler beneath; the two last of front tarsi, the last three or four joints of middle tarsi, and the extreme tip of hind tibiæ and their tarsi are fuscous, while the abdomen, except the three or four basal ventral segments, is black.

Grenada—Mount Gay Estate and St. John's River. Described from five ♀ and four ♂ specimens.

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### 203. *Apanteles herbertii*, n. sp.

♀. Length 2 mm. Black, feebly and sparsely punctate, the head on vertex and temples smooth, impunctate; mandibles rufo-piceous; palpi whitish; two basal joints of antennæ, or at least beneath, and legs brownish-yellow, the hind coxæ large, smooth, black, tips of hind femora, tips of hind tibiæ and their tarsi fuscous. Face punctate, with a distinct median ridge. Antennæ longer than the body, the flagellum black or brown-black, paler beneath towards base. Mesopleura with a smooth, polished, femoral impression, sparsely punctate anteriorly. Metathorax sparsely punctate, without a median carina. Wings hyaline, the tegulæ pale yellowish, the costæ, stigma and radial branch brown, the other veins pallid. Abdomen polished, impunctate, the plate of first segment about 2½ times as long as wide, narrowed towards apex, the second segment about two-thirds the length of the third, with two oblique furrows; ventral segments 1–3 and membranous margins of dorsal segments 1 and 2 yellow.

St. Vincent; Grenada—Mount Gay Estate, St. John's River. Described from five ♀ specimens.

### 204. *Apanteles sordidus*, n. sp.

♂. Length 2 mm. Black, smooth, shining, the thorax on the disk at most with faint, sparse punctures. Head smooth, impunctate, except feebly and sparsely on the face. Mandibles and palpi pale or whitish. Antennæ much longer than the body, black, the two basal joints pale. Mesopleura with a femoral furrow posteriorly. Metathorax polished, with a median carina. Wings hyaline, the tegulæ pale yellowish, the stigma and costæ brown, the internal veins pale or hyaline. Legs brownish-yellow, the posterior coxæ smooth, black, the posterior knees, their tibiæ at apex and the tarsi subfuscous. Abdomen smooth, black, compressed, with a large yellow spot at sides basally; the plate of the first segment is linear, three or more times longer than wide, the sides parallel to near apex where they converge; the second segment is about half the length of the third, with lateral, oblique, grooved lines.

St. Vincent. Described from one ♂ specimen.

### 205. *Apanteles sancti-vincenti*, n. sp.

♂. Length 2·5 mm. Black, finely, closely punctate; head posteriorly smooth, the face microscopically punctate. Mandibles rufous; palpi white. Antennæ longer than the body, brown-black, the



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pedicel ferruginous. Thorax closely, finely punctate, the scutellum, pronotum, sternum and coxæ smooth, polished, the mesopleura anteriorly alone finely punctate, posteriorly smooth, with a femoral furrow. Metapleura anteriorly smooth, posteriorly sparsely punctate, bounded by a carina above. Metathorax punctate, with a central carina. Wings hyaline, iridescent, the tegulæ white, the costa, stigma and nervures, except the median and veins enclosing the discoidal cells, which are pallid, pale brown. Legs brownish-yellow, the posterior coxæ smooth, shining, black, the extreme apex of posterior femora, apical half of their tibiæ, and tarsi fuscous. Abdomen black, shining, the lateral margins of first and second segments and a large blotch on sides of venter basally yellowish; the shield nearly three times as long as wide, narrowed at apex, alutaceous, especially laterally, the second segment hardly one-third the length of the third, with oblique, grooved lines laterally.

St. Vincent. Described from one ♂ specimen.

### 206. *Apanteles xanthaspis*, n. sp.

♀ ♂. Length 2–2·3 mm.; ovipositor not or scarcely exserted. Black, subopaque, closely punctate; vertex of head almost smooth, shining, sparsely punctate; face closely, finely punctate. Mandibles and palpi pale. Antennæ as long as the body, dark brown, paler beneath, the scape and pedicel brownish-yellow, in ♂ longer than the body, yellowish or pale brown. Thorax, scutellum, pronotum, sternum and mesopleura anteriorly closely punctate, the latter smooth and polished around the femoral furrow and posteriorly. Metathorax rugoso-punctate, with a central carina. Wings hyaline, the tegulæ and nervures white or yellowish-white, the costa, stigma and stigmal vein brown; the submedian cell the length of the second discoidal, longer than the median. Legs yellowish or whitish, the very large, closely punctate, posterior coxæ, their femora, except at base, the tips of their tibiæ and the tarsi black or fuscous. Abdomen compressed, black, the first segment, including the plate, the lateral membranous margins of the second and third segments, and the venter to the fourth segment yellow; the plate of the first segment is about three times as long as wide, smooth, narrowed at apex, with a central sulcus, the second very little shorter than the third, with two oblique, grooved lines laterally from base.

St. Vincent; Grenada—Balthazar, Mount Gay Estate. Described from two ♀ and four ♂ specimens.

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## Genus PROTAPANTELES, Ashmead.

### 207. *Protapanteles parallelis*, n. sp.

♀. Length 2 mm.; ovipositor about two-thirds the length of the abdomen. Black, smooth, shining; the mesonotum, at the most, faintly, sparsely and microscopically punctate, the scutellum impunctate. Face with a fine whitish pubescence. Antennæ a little longer than the body, dark brown, the scape black. Mesopleura and metathorax polished, the former with a smooth femoral furrow, the latter without a median carina. Legs brownish-yellow, the posterior coxæ smooth, black, middle tarsi and tips of posterior tibiæ (sometimes) and hind tarsi obfuscated or fuscous. Wings hyaline, iridescent, the costa and stigma pale brown, the interior nervures pallid; submedian cell is as much longer than the median as the second discoidal cell is long, the outer side of the second discoidal cell entirely obliterated; the petiole of the areolet is about the length of the inner face of the areolet. Abdomen black, smooth, shining, the lateral membranous margins of first segment piceous; the plate of the first segment a little more than twice as long as wide, with the sides parallel, while the second segment is very short, about one-third the length of the third.

St. Vincent. Described from one ♀ specimen.

## Genus UROGASTER, Ashmead.

This genus is readily separated from all others in this group by having the metathorax distinctly areolated, or at least with a distinct median area or areola; the ovipositor is always prominent. *Microgaster pinos*, Cresson, from Cuba, evidently belongs here.

The West Indian species known to me may be tabulated as follows:

TABLE OF SPECIES.

Plate of first abdominal segment broad, trapezoidal, less than twice as long as wide at apex. . . . . 2

Plate of first abdominal segment more than twice longer than wide, narrowed, the sides parallel or nearly or slightly arcuate. . 3

Plate of first abdominal segment fully 2½ times as long as wide or even longer, narrowed at apex, or with hind angles rounded off, and always wider at base than at apex. . . . . 6

2. Body wholly black; plate of first segment rugulose, the second segment much shorter than the third, smooth; legs brownish-yellow, the coxæ black, all trochanters and the middle and hind

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femora, except at apex, black or fuscous; ovipositor the length of the abdomen. . . . . (1) *U. balthazari*, n. sp.

Thorax, abdomen and legs honey-yellow, the head black; plate of first segment smooth, with a broad furrow along the sides, and a prominent median carina at base, which becomes forked near the middle of the segment. . . . (2) *U. nigriceps*, n. sp.

3. All coxæ, except sometimes the extreme base of the hind pair, pale or yellowish. . . . . 5

Hind coxæ black. . . . . 4

All coxæ black, or rarely with the front pair pale at apex.

Body wholly black, except sometimes the abdomen at base beneath.

Plate of first segment sculptured, with a large, central, oval enclosure which is transversely rugulose, the second segment scarcely two-thirds the length of the third, almost smooth but with some delicate aciculations; legs brownish-yellow or ferruginous; ovipositor as long as the abdomen; in ♂ the second segment is smooth, only about one-third the length of the third, while the tips of the hind femora, tips of hind tibiæ and the tarsi are fuscous. . . . . (3) *U. meridionalis*, n. sp.

Plate of first segment smooth, shining, impunctate, but with a delicately or distinctly impressed median groove posteriorly.

Second segment scarcely half as long as the third, polished; legs brownish-yellow, the hind femora, tips of hind tibiæ and their tarsi black or dark fuscous; ovipositor a little longer than the abdomen. Head and thorax closely, finely punctate; length 2.5 mm. . . . . (4) *U. grenadensis*, n. sp.

Second segment fully two-thirds the length of the third, polished; legs red, all trochanters, the apex of hind femora, apex of hind tibiæ and their tarsi, except base of first joint, black or fuscous; head and thorax highly polished, impunctate, or at most extremely sparsely and microscopically punctate; stigma hyaline within. Length 4–4·5 mm. ♀. . (5) *U. disputabilis*, n. sp.

4. Plate of first segment smooth, or at most with some sparse punctures, with a median sulcus or furrow posteriorly, the second segment about half the length of the third; legs brownish-yellow, the hind tarsi more or less fuscous; wings hyaline, the stigma and costæ brown. ♂ . . . (6) *U. vulgaris*, n. sp.

Plate of first segment rugulose, the second segment finely aciculated, less than half the length of the third, with oblique, grooved lines at sides; the legs brownish-yellow, the hind femora, tibiæ and tarsi embrowned or fuscous, the tibiæ with a pale annulus at base; ovipositor nearly as long as the abdomen; stigma, costæ and the abscissa of radius brown. ♀. . (7) *U. solitarius*, n. sp.

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5. Body black.

Plate of first segment sparsely punctate, with a median crenate furrow posteriorly, the second segment smooth, less than half the length of the third, with oblique lines laterally; ovipositor as long as the abdomen; two basal joints of antennæ, the tegulæ, the legs and ventral segments 1 and 2 and membranous margins of dorsal segments 1 and 2 pale yellowish-white. . . . . (8) *U. leucopus*, n. sp.

Plate of first segment smooth, polished, impunctate, with a median grooved line posteriorly, the second segment about half as long as the third, with oblique, lateral, grooved lines; ovipositor not much longer than half the length of the abdomen; basal joint of antennæ, the tegulæ, the legs, ventral segments 1 to 4 and membranous margins of dorsal segments 1 to 4 brownish-yellow the yellow of the third dorsal segment extending inwardly on to the disk of the segment. . . . . (9) *U. xanthopus*, n. sp.

Thorax, abdomen and legs honey-yellow; head, except face, black.

Plate of first segment feebly sculptured, the second segment smooth, a little shorter than the hind; ovipositor hardly much longer than half the length of the abdomen. (10) *U. imitator*, n. sp.

6. All coxæ pale, or at most with the hind coxæ dusky at base only. . . . . 9

Hind coxæ alone black . . . . . 8

All coxæ black.

Trochanters pale, except sometimes the first joint of the posterior. . . . . 7

Trochanters, or at least the first joint, black or fuscous.

Plate of first abdominal segment polished, not sculptured, or at most feebly alutaceous, with a few sparse punctures; second segment very short, about one-third the length of third, with two oblique furrows, one on each side; legs brownish-yellow, the middle and hind femora black or embrowned, the tips of hind tibiæ and their tarsi, fuscous or subfuscous; stigma and veins whitish or hyaline; ovipositor the length of the abdomen, or only about half its length. . . . . (11) *U. leucostigmus*, n. sp.

7. Plate of first segment polished, impunctate, the second segment very short, with oblique furrows at sides; legs brownish-yellow, the middle and hind femora, tip of tibiæ and their tarsi more or less embrowned or fuscous. . . . . (12) *U. hyalinus*, n. sp.

Plate of first abdominal segment finely sculptured, the second two-thirds the length of the third, aciculated and with two oblique, grooved lines; legs ferruginous, the hind knees, tips of hind tibiæ and their tarsi fuscous; stigma, costæ and the branch of the radius brown. ♀. . . . . (13) *U. aciculatus*, n. sp.

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8. Plate of first segment fully thrice as long as wide, sculptured, with a median sulcus; the second segment scarcely half as long as the third, smooth, with oblique, grooved lines laterally; legs brownish-yellow, tips of hind femora, tips of tibiæ and tarsi fuscous. . . . . (14) *U. rhomboidalis*, n. sp.
9. Plate of first segment fully thrice as long as wide, sculptured, the second segment less than half the length of the third, smooth, with oblique grooved lines at the sides; legs brownish-yellow, tips of hind tibiæ and the tarsi fuscous. (14) Variety of *U. rhomboidalis*.

### 208. *Urogaster balthazari*, n. sp.

♀. Length 2·5 mm.; ovipositor as long as the abdomen. Black, subopaque, closely, finely punctate, the scutellum, mesopleura and metapleura *at base* polished, impunctate. Labrum and palpi pale. Legs brownish-yellow, all coxæ and trochanters and the middle and hind femora, except at apex, black or dark fuscous. Metathorax finely rugulose and distinctly areolated, the median area or areola lozenge-shaped. Wings hyaline, the stigma and veins pale or hyaline. Abdomen black, with, at the most, a piceous tinge at sides of the first segment; plate of first segment trapezoidal, rugose or coarsely sculptured, not quite twice as long as wide at apex; second segment smooth, about two-thirds the length of the third; ovipositor about as long as the abdomen, pilose.

Grenada—Balthazar. Described from one ♀ specimen.

### 209. *Urogaster nigriceps*, n. sp.

♀. Length 4 mm.; ovipositor about one-third the length of the abdomen. Brownish-yellow, smooth, impunctate; head, mandibles, spot at apex of posterior femora, apex of their tibiæ and tarsi black. Face subelongate, pubescent, with a central ridge, the clypeus and labrum elongated; palpi pale. Mesopleura with a distinct discal furrow. Metathorax rugulose, areolated, the central area hexagonal. Wings fuliginous, the venation dark brown, the areolet open behind, the submedian cell about half the length of the second discoidal cell, longer than the median. Abdomen smooth, shining, the plate of first abdominal segment about twice as long as wide, its surface slightly alutaceous, with a central carina at base, becoming highly elevated and forked at the middle of the plate, leaving a V-shaped fovea posteriorly; the second segment is about two-thirds the length of the third; ovipositor broad, the sheaths black.

St Vincent. Described from eight ♀ specimens.

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### 210. *Urogaster meridionalis*, n. sp.

♀ ♂. Length 2·5–2·7 mm.; ovipositor as long as the abdomen or nearly. Black, subopaque, closely, finely punctate, the scutellum and a short space in front polished, shining, impunctate; labrum and palpi white; legs brownish-yellow, the anterior pair paler, middle and posterior coxæ black, pubescent, impunctate, the anterior coxæ usually pale at apex. Head on vertex shining, more feebly punctate; punctures on face distinct, the face sparsely pubescent. Antennæ about as long or longer than the body, black, the basal joint sometimes with a pale spot beneath. Mesonotum subopaque, finely, confluently punctate, the hind margin just in front of the scutellum and the posterior angles, near the tegulæ, smooth and shining. Scutellum highly polished, impunctate, with a crenate furrow at base and along sides. Prosternum closely, finely punctate; mesopleura polished, impunctate posteriorly and surrounding the deep femoral furrow, but anteriorly, closely, finely punctate. Metathorax rugulose, coarsely areolated, the central area nearly lozenge-shaped, the posterior lateral angles subacute, the metapleura anteriorly before the spiracle, smooth, shining, posteriorly rugose and opaque. Wings clear hyaline, the stigma and veins hyaline, the costa yellowish; the areolet is open behind and its petiole is only slightly longer than its inner face; the submedian cell is much longer than the median. Abdomen black, shining, the coxal cavities, on each side, sometimes pale, the plate of the first segment is more than twice as long as wide, rugulose, with a central depression, the sides parallel; the central depression is transversely rugulose; the second segment is about half the length of the third and sometimes faintly sculptured.

St. Vincent; Grenada. Described from one ♂ and three ♀ specimens.

### 211. *Urogaster grenadensis*, n. sp.

♀. Length 2·5 mm. Black, subopaque, finely, closely punctate, except the head on vertex, the scutellum and the mesopleura which are smooth and shining. Mandibles ferruginous. Palpi white. Legs brownish-yellow, the coxæ black, the anterior pair sometimes pale at apex, the hind femora, tips of their tibiæ and their tarsi black or dark fuscous. Wings hyaline, the stigma and poststigmal veins light brown, the other veins pale yellowish or hyaline. Abdomen black, hardly as long as the head and thorax united or no longer, the ovipositor very long, as long as the abdomen, a little thickened at apex, pilose; plate of first segment more than twice

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longer than wide, smooth, impunctate, with a median grooved line posteriorly, the sides parallel; second segment not quite half as long as the third.

Grenada—Balthazar. Described from four ♀ specimens.

212. *Urogaster disputabilis*, n. sp.

♀ ♂. Length 3·5–4 mm. Polished black, punctate and covered with a sparse, whitish pubescence, more dense on the face. Head subrostriform, the face long, with two faint, parallel depressions below the antennæ; clypeus and labrum prolonged; basal joint of maxillary palpi and labial palpi dusky; mandibles black. Antennæ black, a little longer than the body. Thorax polished, impunctate, the scutellum with a crenate furrow across the base and along the side; mesopleura smooth, with a slight femoral furrow posteriorly; metathorax rugose, areolated, the middle area pentagonal, the basal angles of the metapleura, formed by the spiracular furrow, smooth and shining. Legs rufous, the coxæ, trochanters, apex of posterior femora and tibiæ, and their tarsi, black, tibial spurs white. Wings salty-white, hyaline, the costal edge of the stigma and post-stigmal vein brown; the areolet is open behind and its petiole is slightly bent outwardly, 2½ times longer than the inner side of the areolet. Abdomen black, smooth, shining, the sides of venter toward base pale, or at least two or three of the segments pale; plate of first segment trapezoidal, longer than wide, widest at apex, with a central furrow posteriorly; the second segment is about two-thirds as long as the third, with two short, oblique furrows laterally; ovipositor hardly longer than half the length of the abdomen.

St. Vincent; Grenada—Mount Gay Estate. Several specimens.

213. *Urogaster vulgaris*, n. sp.

♂. Length 2·5–3 mm.; ovipositor less than half the length of abdomen. Black, subopaque, pubescent, closely punctate. Head in front finely, closely punctate, the face with a central ridge; labrum piceous or brownish; palpi white. Antennæ in ♀ as long as the body, brown-black, the two basal joints pale beneath; in ♂ a little longer than the body. Thorax closely punctate, the scutellum smooth, polished; sternum and mesopleura posteriorly smooth, polished, the latter anteriorly finely punctate. Metathorax rugulose, coarsely areolated, the central area large, irregularly rounded. Legs, except the hind coxæ, brownish-yellow, the posterior tarsi being more or less fuscous. Wings hyaline, the costa and stigma

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brown, the tegulæ pale yellowish, the petiole of the areolet is about one-half longer than the inner face of the areolet. Abdomen black, shining; in ♀ the lateral margins of first and second dorsal segments and small spots at sides of venter basally brownish-yellow or reddish-yellow; the plate of the first segment is more than twice as long as wide, slightly narrowed towards tip, smooth, or at most with some sparse punctures, with a central grooved line posteriorly; the second segment is a little less than half the length of the third, with oblique lines laterally.

St. Vincent. Described from several ♂ specimens.

### 214. *Urogaster solitarius*, n. sp.

♀. Length 2 mm.; ovipositor nearly as long as the abdomen. Differs from *U. vulgaris* in its smaller size, in having the first antennal joint pale brownish or yellowish, the mesosternum polished impunctate, the mesopleura with a crenate furrow, impunctate anteriorly, the legs brownish-yellow, the hind coxæ alone black, hind femora, hind tibiæ, except narrowly at base, and their tarsi more or less embrowned or fuscous. The sides of the venter basally are piceous while the wings are hyaline, with the costa, stigma and postmarginal vein brown, the internal veins pale or hyaline. The plate of the first abdominal segment is sculptured; the second segment is less than half the length of the third and delicately aciculated.

Grenada—Mount Gay Estate. Described from a single specimen.

### 215. *Urogaster leucopus*, n. sp.

♀. Length 2·5–2·8 mm.; ovipositor as long as the abdomen. Black, subopaque, closely, finely punctate and sericeous, the scutellum smooth, shining but sparsely punctate. Head transverse, finely punctate, the face with a slight keel above; labrum yellowish; palpi white; mandibles brown. Antennæ longer than the body, black, the two basal joints pale, sometimes fuscous above. Tegulæ and legs, including coxæ, yellowish-white; a spot at apex of posterior femora, tips of their tibiæ and the tarsi fuscous, the extreme base of the tarsal joints 1 to 3 and the tibial spurs white. Mesopleura anteriorly closely punctate, behind the discal furrow polished. Metathorax rugulose, areolated, the middle area pentagonal. Wings hyaline, iridescent, the venation brown; the submedian cell is the length of the second discoidal cell, longer than the median. Abdomen black, polished, the lateral margins

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of first and second segments and the venter at sides towards base pale, plate of the first segment narrowed towards apex, punctate, the second segment less than one-half the length of the third, with lateral oblique furrows.

St. Vincent; Grenada—Balthazar. Described from four ♀ specimens.

### 216. *Urogaster xanthopus*, n. sp.

♀. Length 3 mm.; ovipositor two-thirds the length of the abdomen or longer than half its length. Black, subopaque, finely, closely punctate, pubescent, the scutellum highly polished, impunctate. Face bare, closely punctate, without a facial ridge. Apex of clypeus, mandibles and palpi pale. Antennæ longer than the body, brown-black, the two basal joints pale brownish-yellow. Tegulæ and basal part of costa yellowish-white. Mesopleura foveated and smooth and shining posteriorly, anteriorly closely, finely punctate. Metathorax areolated, wrinkled but shining, the areola large, rounded. Legs, including coxæ, brownish-yellow. Wings hyaline, iridescent, the costa and stigma rust-brown, the internal veins paler; the areolet is open behind, its petiole forming a curved line with the transverse cubitus or the inner side of areolet; the submedian cell is like that of the previous species. Abdomen above black, the lateral margins of first and second segments, a wedge-shaped spot at sides of third, sometimes the suture between the seventh and eighth segments, and the venter yellow; the plate of the first segment is as in the previous species but smooth, with a central impressed line towards apex; the second segment is about half the length of the third, with lateral oblique furrows.

St. Vincent. Described from two ♀ specimens.

### 217. *Urogaster imitator*, n. sp.

♀. Length 2·5 mm.; ovipositor scarcely half the length of the abdomen. Thorax, abdomen and legs honey-yellow, the mesonotum shining but sparsely punctate; head, except the face, black; flagellum brown, the scape and the pedicel pale. Wings hyaline, the tegulæ whitish, the stigmal and poststigmal vein brown, the internal veins pallid. Metathorax areolated, finely rugulose, the areola lozenge-shaped. Abdomen a little longer than the thorax, the ovipositor alone black, scarcely two-thirds the length of the abdomen; plate of first segment nearly thrice as long as wide, with parallel sides, the surface finely but distinctly sculptured; second

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segment smooth, shorter than the third. The extreme tips of hind tibiæ and their tarsi more or less subfuscous.

St. Vincent. Described from one ♀ specimen.

This species bears a superficial resemblance to *U. nigriceps.*

218. *Urogaster leucostigmus*, n. sp.

♀ ♂. Length 2–2·25 mm.; ovipositor a little longer than half the length of the abdomen. Black, closely, finely punctate, sericeous. Antennæ black or brown-black, a little longer than the body. Palpi white. Scutellum polished, impunctate. Mesopleura, except the depression posteriorly, and the sternum punctate. Metathorax finely rugulose, areolated, the central area much longer than wide. Wings salty-white, the tegulæ and costa yellowish-white, stigma white, its margins and the radius tinged with yellowish, the rest of the nervures hyaline; the submedian cell is only about half the length of the second discoidal cell, longer than the median. Legs brownish or dark honey-yellow; all coxæ black, the trochanters, or at least the first joint of the trochanters, and base of femora black, middle and posterior femora, except the extreme tips, black or dark brown, the apical half or more of the posterior tibiæ and their tarsi more or less fuscous. Abdomen black, shining, the valvula ventralis piceous, in the ♂ with a small white spot at sides near base; the plate of first segment smooth, or at most feebly alutaceous, slightly narrowed, at apex; the second segment is very short, about one-third the length of the third, with oblique, grooved lines at the sides.

St. Vincent and Grenada. Described from several specimens.

219. *Urogaster aciculatus*, n. sp.

♂. Length 3 mm.; black, head subrostrate, on vertex and temples polished, impunctate, on face closely, microscopically punctate, the labrum large, prominent. Palpi pale yellowish. Thorax closely punctate, the parapsidal furrows represented by two depressions posteriorly. Femoral furrows on the mesopleura distinct, crenulate. Metathorax rugulose, the areola rather large, rounded. Wings hyaline, the costa towards apex, the stigma, poststigmal vein and the abscissa of the radius, which is much shorter than the inner side of the areolet, brown, the internal veins paler. Legs, except coxæ, ferruginous, the hind knees, tips of hind tibiæ and their tarsi fuscous. Abdomen black, the lateral membranous margins of dorsal segments 1 and 2 and ventral segments 1—3 pale brownish or yellowish; plate of first segment finely sculptured, about

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thrice as long as wide, narrowed at apex; second segment about two-thirds the length of the third, finely, longitudinally aciculated and with two oblique lines laterally.

Grenada—St. John's River. Described from one ♂ specimen.

### 220. *Urogaster rhomboidalis*, n. sp.

♀ ♂. Length 2–2·5 mm.; ovipositor as long as the abdomen. Black, subopaque, closely, finely punctate; head smooth, shining, impunctate; clypeus transverse; mandibles piceous; palpi white. Antennæ in ♀ about as long as the body, in ♂ a little longer, black or brown-black, in ♀ paler beneath. Thorax closely, finely punctate, the scutellum smooth, polished, rarely with a few punctures at base, the mesopleura anteriorly punctate and pubescent, posteriorly with a depression, smooth and shining. Metathorax rugulose, areolated, the central area rhomboidal. Wings hyaline, iridescent, the tegulæ and the costa at base yellowish-white, the rest of the costa and the stigma brown, the latter pale in the ♂, the internal veins paler or hyaline; the submedian cell is the length of the second, discoidal cell longer than the median, the areolet open behind, its petiole slightly bent. Legs yellowish or yellowish-white, in the ♀ with the posterior coxæ always black or black basally, the tips of hind femora and tips of their tibiæ and the tarsi fuscous. Abdomen in ♂ black, shining, with the lateral margins of first and second dorsal segments and base of the venter yellow or brownish-yellow, in the ♀ black, except a small pale spot at sides of the venter near the base; in both sexes the plate of the first segment is rugulose and narrowed posteriorly; the second segment is about one-third the length of the third or at least less than half as long, with oblique, grooved lines at the sides.

St. Vincent. Described from one ♀ and several ♂ specimens.

## Genus Pseudapanteles, Ashmead.

Three species fall into this genus, distinguished as follows:

### TABLE OF SPECIES.

Plate of first abdominal segment more than twice longer than wide, narrowed towards apex or the sides slightly curved outwardly. 2.

Plate of first abdominal segment nearly three times as long as wide, the sides parallel.

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First and second abdominal segments alone sculptured, the second being striate, the third one-half longer than the second; all coxæ black or the middle and anterior coxæ are black basally; legs brownish-yellow, the hind knees, tips of hind tibiæ and their tarsi, fuscous. ♀ ♂.

(1) *P. sancti-vincenti*, n. sp.

2. Brownish, the face, two basal joints of antennæ, pro- and mesosternum and the legs, honey-yellow, the metathorax smooth, black, with a median carina; second abdominal segment very short, scarcely half the length of the third, with two oblique furrows. ♂ . . . . . (2) *P. brunneus*, n. sp.

Honey-yellow, the head above and behind black; sheaths of the long ovipositor and antennæ, except the two basal joints and a broad white annulus on the antennæ black. ♀

(3) *P. annulicornis*, n. sp.

## 221. *Pseudapanteles sancti-vincenti*, n. sp.

♀ ♂. Length 2·5 mm.; ovipositor about two-thirds the length of the abdomen. Black, subopaque, closely punctate; head above polished, face high medially, microscopically punctate and pubescent below. Mouth parts pale. Antennæ black, a little longer than the body. Thorax closely punctate, with the parapsidal furrows more or less strongly indicated posteriorly. Scutellum polished, sparsely punctate, with a deep crenulate furrow across the base. Mesopleura anteriorly distinctly, rather closely, punctate, posteriorly highly polished, impunctate, with an oblique crenate furrow on its disk. Metathorax rugose, with a central longitudinal carina, the upper margin of the metapleura also carinate. Wings hyaline, iridescent; the tegulæ and venation brown; the submedian cell is two-thirds the length of the second discoidal cell, longer than the median. Legs brownish-yellow; in ♀ only the posterior coxæ are black, the posterior knees, tips of their tibiæ and the tarsi more or less fuscous; sometimes the middle tarsi are obfuscated; in the ♂ all the coxæ are black or black basally, the posterior legs as in the ♀, while the tarsi are fuscous. The abdomen is black, the lateral margins of first and second segments and the ventral segments 1–2 or 1–3 are reddish-yellow; the plate of first segment is finely rugulose, nearly thrice as long as wide and narrowed posteriorly; the second segment is about half the length of third, finely striate and with lateral, oblique, grooved lines.

St. Vincent. Described from five specimens.

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### 222. *Pseudapanteles brunneus*, n. sp.

♂. Length 1·6 mm. Brownish; the face, two basal joints of antennæ, pro- and mesosternum, legs (except hind coxæ, tips of hind tibiæ and the tarsi more or less), and the venter, honey-yellow; the scutellum and metathorax and hind coxæ are black; flagellum brown-black; tips of hind tibiæ and more or less of their tarsi fuscous. The head, except the face below the antennæ, the scutellum and the metathorax are smooth, shining, impunctate, the latter with a prominent median carina; wings hyaline, the tegulæ and internal veins whitish, the costæ and stigma brown. Abdomen not longer than the thorax, compressed, the plate of first segment and rest of the dorsum brownish or black; beneath pale yellowish; the plate of first segment is about three times as wide as long, narrowed posteriorly, with a median sulcus anteriorly at base and almost smooth, with some sparse punctures; second segment very short, smooth, less than half the length of the third, with two oblique furrows.

St. Vincent. Described from one ♂ specimen.

### 223. *Pseudapanteles annulicornis*, n. sp.

♀ ♂. Length 2–2·5 mm.; ovipositor about two-thirds the length of abdomen. Honey-yellow; head above and antennæ black or fuscous; in the ♀ antennal joints 8, 9, 10 white, in ♂ wholly fuscous, the two basal joints, in both sexes, honey-yellow. The whole surface, in this species, except the mesoscutum which is finely, faintly punctate, is smooth and shining; the mesopleura have the usual sulcus, and the metathorax has a central longitudinal carina. Wings hyaline, iridescent, the stigma and veins brown; the submedian cell is the length of the second discoidal cellule, longer than the median, while the petiole of the areolet is not longer than the inner side of the areolet. Legs concolorous with the body, in the ♂ the tips of posterior tibiæ and the tarsi are fuscous. Tip of abdomen in ♀ fuscous; the shield of first segment long, narrowed posteriorly, the second segment about half the length of the third, with oblique, grooved lines laterally.

St. Vincent. Described from four specimens.

## Genus PROTOMICROPLITIS, Ashmead.

To this genus belongs *Microgaster mediatus*, Cress., Proc. Ent. Soc. Phil., iv, p. 66.

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## Genus MICROPLITIS, Förster.

### 224. *Microplitis carinata*, n. sp.

♂ ♀. Length 2·5 mm.; ovipositor as long as the abdomen. Black; head smooth, the face sparsely punctate; clypeus and mandibles yellow; palpi white. Antennæ a little longer than the body, black, the two basal joints yellow. Thorax finely, closely punctate, but not densely except anteriorly, the scutellum more sparsely punctate; pronotum and mesopleura smooth, polished, impunctate, the mesopleura with a long, wide furrow terminating before reaching the base of the middle coxæ, its bottom aciculated; metapleura bounded above by a carina, smooth, polished, with a furrowing extending from the spiracles to the middle coxæ. Metathorax smooth, or very slightly alutaceous, with a central carina. Legs, including coxæ, brownish-yellow, the posterior femora and extreme tips of hind tibiæ at apex and the tarsi fuscous. Wings hyaline, the venation dark brown; the submedian cell is as much longer than the median as half the length of the second discoidal cellule; the areolet triangular, closed, the petiole scarcely longer than its inner side. Abdomen depressed, black above, except margins of first and second segments, most of the third, usually the suture between the seventh and eighth segments, and the venter wholly yellow; the plate of the first segment is long, linear, three or more times longer than wide and finely sculptured; segments beyond polished, impunctate, the second hardly half the length of the third.

The ♂ agrees with the ♀, except that the posterior coxæ are always black, the antennæ thicker and longer, while the punctuation of the scutellum is denser. Occasionally the middle tarsi and the posterior tibiæ outwardly are wholly fuscous.

St. Vincent. Described from five specimens.

## Subfamily XIV. *OPIINÆ.*

## Genus OPIUS, Wesmael.

### 225. *Opius unifasciatus*, Ashmead.

Grenada—Mirabeau Estate. One ♂ and one ♀ specimen.

### 226. *Opius salvini*, Ashmead.

Grenada—Balthazar. Two ♂ specimens.

### 227. *Opius insularis*, Ashmead.

Grenada—Chantilly Estate. One ♂ specimen.

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### 228. *Opius grenadensis*, n. sp.

♀. Length 1·2 mm.; ovipositor two-thirds the length of the abdomen. Polished black, the mesonotum without parapsidal furrows; two basal joints of antennæ, palpi, and legs yellow; mandibles reddish-testaceous, furrow across base of scutellum crenate at bottom; abdomen longer than the thorax, first segment scarcely longer than wide at apex, striate. Wings hyaline, the venation as in *O. salvini*, the stigma and veins brown-black.

Grenada—Balthazar. Described from one ♀ specimen. Closely allied to *O. salvini* but separated by the shorter ovipositor, smoother metathorax and darker coloured stigma.

### 229. *Opius tantillus*, n. sp.

♀. Length 0·9 mm.; ovipositor very short, only slightly exserted. Polished black; two basal joints of antennæ, mandibles, palpi, tegulæ and legs pale yellowish; flagellum brown. Metathorax rugulose, with a slight median keel at base. Wings hyaline, the stigma and veins brown, the recurrent nervure joining an angle in the second cubital cell. Abdomen broadly oval, shorter than the thorax, the first segment linear, rugose.

Grenada—Balthazar. Described from two ♀ specimens. Distinguished from *O. salvini* and allies by its smaller size, subexserted ovipositor, shape of abdomen and by the sculpture of metathorax and first abdominal segment.

## Subfamily XV. *BRACONINÆ*.

## Genus IPHIAULAX, Förster.

### 230. *Iphiaulax xanthospilus*, Ashmead.

Grenada—Balthazar, Chantilly Estate. Many specimens in both sexes.

### 231. *Iphiaulax grenadensis*, n. sp.

♀. Length 11–13 mm.; ovipositor almost as long as the body. Head and antennæ black; palpi yellowish; thorax, abdomen and legs, except tarsi, ferruginous; tarsi fuscous. Both pairs of wings at apical third or more fuscous, the basal two-thirds yellowish-hyaline, the stigma lemon-yellow. Form elongate. Head subquadrate, the temples oblique, above and behind smooth, impunctate, the face coriaceous, opaque, pubescent. Thorax smooth, impunctate, the mesonotum trilobed. Abdomen elongate-oval, longer than the head and thorax united, polished, the first segment trapezoidal,

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furrowed along the sides, the lateral margins reflexed; second segment wider than long, with a triangular lobe at basal middle; from the base of this lobe on either side is an oblique furrow extending into a large basin or depression on each side; third segment separated from the second by a deep crenate furrow at base; fourth and fifth segments also have a transverse crenate furrow towards base; hypopygium prominent, plowshare shaped.

♂. Length 9–11 mm. Agrees well with the female, except in the usual sexual differences and with the legs a little darker in colour.

Grenada—Balthazar, Granville. Described from four ♀ and five ♂ specimens.

232. *Iphiaulax flavomaculatus*, Ashmead.

Grenada—Balthazar. One ♀ specimen.

Genus GLYPTOMORPHA, Holmgren.

233. *Glyptomorpha thoracica*, n. sp.

♀. Length 6 mm.; ovipositor a little shorter than abdomen, black. Head, antennæ, legs and abdomen black; thorax wholly orange as well as a spot on anterior orbits and beneath eye; wings smoky black. Abdomen oblong-oval; first segment coarsely, irregularly rugose, with a broad channel on each side leaving a large elevated median plate, the plate with a central median carina and rugose on each side; segments 2–4 coarsely, longitudinally striate, with oblique lateral furrows at base, the fifth and following segments smooth, polished, the fifth, however, showing some delicate striæ at base.

Grenada—Chantilly Estate. Described from one ♀ specimen.

Genus BRACON, Fabricius.

234. *Bracon femoratus*, Ashmead.

Grenada—Chantilly Estate. Two ♂ specimens.

235. *Bracon sancti-vincenti*, Ashmead.

Grenada—Mount Gay Estate, Chantilly Estate, Granville. Six specimens.



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236. *Bracon vulgaris*, Ashmead.

Grenada—Balthazar, Mount Gay Estate. Many specimens.

Genus TROPIDOBRACON, Ashmead.

This genus is easily separated from *Bracon*, Fabr., *sens. str.*, by having a distinct median carina on the metathorax.

237. *Tropidobracon fuscitarsis*, n. sp.

♀. Length 2·5 mm.; ovipositor two-thirds the length of the abdomen. Head and thorax polished, black, impunctate, except the metathorax which is finely rugulose with a distinct median carina. Palpi, mouth-parts and tegulæ yellowish-white. Legs reddish-yellow, with all the tarsi fuscous. Abdomen rufous, with the first segment above and a median spot at base of second black; first segment rugulose, second and third segments shagreened; rest of abdomen smooth, polished.

Grenada—Mount Gay Estate. Described from one ♀ specimen.

Subfamily XVI. *RHOGADINÆ.*

Tribe IV. DORYCTINI.

Genus STENOPHASMUS, Smith.

238. *Stenophasmus apicalis*, Ashmead.

Grenada—Balthazar, Grand Etang. Seven ♂ specimens.

Subfamily XVII. *SPATHIINÆ.*

Tribe I. PAMBOLINI.

Genus ECPHYLUS, Förster.

239. *Ecphylus* (*Lysitermus*) *terminalis*, Ashmead.

St. Vincent; Grenada. This species was incorrectly referred to *Lysitermus*. An additional ♀ specimen is from Balthazar, Grenada.

Genus TELEBOLUS, Marshall.

240. *Telebolus* (*Lysitermus*) *fascipennis*, Ashmead.

St. Vincent; Grenada. This species was also incorrectly referred to *Lysitermus*. I have recognized a single male from Balthazar, Grenada.

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Tribe II. HORMIINI.

Genus HORMIUS, Nees.

241. *Hormius rugosicollis*, Ashmead.

Grenada—Balthazar. One specimen.

Genus HETEROSPILUS, Haliday.

As synonyms of this genus I have placed *Synodes*, Ratzeb., *Cænophanes*, Förster, and *Eurybolus*, Thomson. The following additional species and specimens were taken in Grenada.

242. *Heterospilus fasciatus*, Ashmead.

Grenada—Balthazar, Grand Etang. Two ♀ and three ♂ specimens.

243. *Heterospilus nigrescens*, Ashmead.

Grenada—Balthazar, Grand Etang, Mirabeau Estate. Many ♂ specimens.

244. *Heterospilus terminalis*, n. sp.

♀. Length 2–2·2 mm.; ovipositor much shorter than the abdomen, sometimes scarcely half as long. Black; antennæ basally, collar, more or less of second abdominal segment, with sometimes the first at the apex or entirely and the terminal two or three segments ferruginous or testaceous; antennæ dusky or brownish towards apex; palpi long, white; legs flavo-testaceous, the coxæ and trochanters sometimes whitish. The head and thorax anteriorly are polished, impunctate, the parapsidal furrows distinct, the metathorax rugulose, distinctly areolated, the areola lozengoidal. Wings hyaline, the stigma and veins brown, the first transverse cubitus incomplete, evanescent at base but if complete would be interstitial with the recurrent nervure. Abdomen oblong, as long or nearly as long as the head and thorax united, the first segment a little shorter than the second, the first entirely and the second for two-thirds its length longitudinally striated, rest of abdomen smooth, polished.

The head in the ♂ varies from a brown to a black and the abdomen at tip is most frequently black, while the hind wings have a large stigma, otherwise in sculpture and size they are quite similar.

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Grenada—Mirabeau Estate, Chantilly Estate, Grand Etang, Balthazar. Described from several specimens representing both sexes.

### Genus TRISSARTHRUM, Ashmead.

245. *Trissarthrum (Dimeris) maculipenne*, Ashmead.

St. Vincent.

## Family LXXIX. STEPHANIDÆ.

## Suborder II. PHYTOPHAGA.

### Superfamily IX. *SIRICOIDEA*.

### Superfamily X. *TENTHREDINOIDEA*.

## Family LXXXVI. HYLOTOMIDÆ.

### Subfamily I. *SCHIZOCERINÆ*.

### Genus HEMIDIANEURA, Kirby.

246. *Hemidianeura thoracica*, n. sp.

♀. Length 3·8–4 mm. Head, except face below the antennæ, the long pubescent third joint of antennæ, a broad band on mesopleura along the mesosternum, and the abdomen black; the thorax, except as mentioned, orange-yellow; face, clypeus, first two joints of antennæ and the legs pale yellowish, the latter more or less whitish. Wings subfuliginous, the third cubital cell scarcely half the length of the second, the third transverse cubitus broken by a stump of a vein below its middle; hind wings with two discal cells, *the lanceolate cell distinct*.

Grenada—Balthazar, Grand Etang. Described from two ♀ specimens.

## Family LXXXIX. PTERYGOPHORIDÆ.

### Subfamily I. *LOBOCERATINÆ*.

### Genus ACORDULECERA, Say.

247. *Acordulecera insularis*, n. sp.

♀. Length 3·6 mm. Head black, the clypeus, labrum and mouth parts whitish; thorax, except the metapleura and the depressions surrounding the postscutellum which are black, honey-yellow; legs and the abdomen beneath pale or yellowish-white, the tips of hind

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tibiæ and their tarsi subfuscous; abdomen above blackish, with an irregular central band extending from base to the sixth segment; apex of eighth segment whitish. Wings hyaline, the stigma and veins dark brown, the *outer edge* of costa and the outer edge of the stigma at base black.

St. Vincent. Described from one ♀ specimen, taken at an elevation of 2000 feet.

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## *A List of the West Indian* Hymenoptera.*

## Suborder I. HETEROPHAGA.

### Superfamily I. *APOIDEA*.

### Family I. APIDÆ.

#### Subfamily I. *MELIPONINÆ*.

#### MELIPONA, Illiger.

1. *M. fulvipes*, Guérin. Cuba; Jamaica.
2. *M. paupera*, Prov. ☿. Trinidad.
3. *M. trinidadensis*, Prov. ☿. Trinidad.
4. *M. variegatipes*, Gribodo. ☿ ♂. Guadeloupe.

#### TRIGONA, Jurine.

5. *T. nigrocyanea*, Ashm. ♂. Grenada.

#### Subfamily II. *APINÆ*.

#### APIS, Linné.

6. *A. mellifica*, Linné. Grenada; Cuba; Porto Rico (Cosmopolite).

### Family II. BOMBIDÆ.

#### BOMBUS, Fabricius.

7. *B. antiguensis*, Fabr. ♀. Antigua.

* Species *without* sexual signs, ♀ ♂, after them are known in both sexes.

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## Family III. EUGLOSSIDÆ.

### EUGLOSSA, Latreille.

8. *E. ignita*, Smith. ♂. Jamaica.
9. *E. piliventris*, Guér. ♀. Jamaica.

### DULEMA, Lepeletier.

10. *E. terminata*, Smith. ♂. Trinidad.

## Family V. PSITHYRIDÆ.

None.

## Family IV. ANTHOPHORIDÆ.

### CENTRIS, Fabricius.

11. *C. æthiops*, Cress. ♀. Cuba.
12. *C. apicalis*, Smith. ♀. St. Barthol.; St. Vincent.
13. *C.* (?) *cornuta*, Cress. ♀. Cuba.
14. *C. crassipes*, Smith. ♂. Jamaica.
15. *C. domingensis*, D. T. (= *C. thoracica*, Sm.). ♀. San Domingo.
16. *C. elegans*, Smith. ♀. St. Vincent; Grenada.
17. *C. fasciata*, Smith. Jamaica.
18. *C. fulviventris*, Cress. ♀. Cuba.
19. *C. hæmorrhoidalis*, Fabr. Grenada; Cuba; Jamaica; Porto Rico; Centr. Am.; S. Am.
20. *C. insularis*, Smith. ♀. San Domingo.
21. *C. lanipes*, Fabr. Porto Rico; Centr. Am.; N. Am.
22. *C. pœcila*, Lepel. Cuba.
23. *C. simillima*, Smith. ♀. San Domingo.
24. *C. versicolor*, Fabr. Grenada; St. Vincent; Porto Rico; Centr. Am.
25. *C. xylocopoides*, Fox. Grenada; Trinidad.

### ANTHOPHORA, Latreille.

26. *A. apicalis*, Guér. ♀. Cuba.
27. *A. atrata*, Cress. ♂. Cuba.
28. *A. godefredi*, Dours. St. Vincent.
29. *A. hilaris*, Smith. ♀. San Domingo.
30. *A. krugii*, Cress. Porto Rico.
31. *A. modestus*, Smith. ♀. St. Vincent.
32. *A. tricolor*, Fabr. Porto Rico; Centr. Am.

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### MELISSODES, Latreille.

33. *M. lanierii*, Guér. Cuba.
34. *M. maura*, Cress. ♀. Cuba.
35. *M. mimica*, Cress. ♂. Cuba; Jamaica; St. Vincent.
36. *M. pullata*, Cress. Cuba.
37. *M. trifasciatella*, Ashm. St. Vincent.
38. *M. trifasciata*, Cress. ♀. Jamaica.

### EPICHARIS, Klug.

39. *E. lateralis*, Smith. ♀. Trinidad.

### EXOMALOPSIS, Spinola.

40. *E. cubensis*, Spin. ♀. Cuba.
41. *E. pubescens*, Cress. Cuba; Grenada; St. Vincent.
42. *E. pulchella*, Cress. ♀. Cuba; Jamaica; Porto Rico.
43. *E. rufitarsis*, Smith. ♀. Jamaica; Cuba; Grenada; St. Vincent.
44. *E. similis*, Cress. Cuba; Porto Rico.

## Family VI. NOMADIDÆ.

### CROCISA, Latreille.

45. *C. pantalon*, Dewitz. ♂. Porto Rico.

### EPEOLUS, Latreille.

46. *E. pulchellus*, Cress. ♂. Cuba.
47. *E. rufoclypeatus*, Fox. ♀. Cuba.
48. *E. rufotegularis*, Ashm. Grenada; Grenadines.
49. *E. vicinus*, Cress. Cuba; Jamaica.
50. *E. wilsonii*, Cress. ♂. Cuba.

### MELISSA, Smith.

51. *M. azurea*, Lepel. Cuba.
52. *M. imperialis*, Ashm. St. Vincent.

### NOMADA, Scopoli.

53. *N. cubensis*, Cress. Cuba; Porto Rico.
54. *N. flaviceps*, Cress. ♂. Cuba.
55. *N. krugii*, Cress. Porto Rico.
56. *N. tibialis*, Cress ♀. Cuba.

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## Family VII. CERATINIDÆ.

### CERATINA, Latreille.

57. *C. cyaneiventris*, Cress. ♀. Cuba.
58. *C. nigrita*, Ashmead. St. Vincent.

## Family VIII. XYLOCOPIDÆ.

### XYCOLOPA, Latreille.

59. *X. cubæcola*, Lucas. Cuba; California.
60. *X. grossa*, Drury. W. I.; Jamaica.
61. *X. mordax*, Smith. W. I.; San Domingo.
62. *X. morio*, Fabr. Grenada; St. Vincent; Cuba; Jamaica; Porto Rico; S. Am.

## Family IX. MEGACHILIDÆ.

### Subfamily I. *OSMIINÆ*.

None.

### Subfamily II. *MEGACHILINÆ*.

### MEGACHILE, Latreille.

63. *M. armaticeps*, Cress. ♀. Cuba.
64. *M. atriceps*, Cress. ♀. Cuba.
65. *M. binotata*, Guér. ♀. St. Thomas; Grenada; St. Vincent; Grenadines
66. *M. binotulata*, D. T. ♀. Cuba (? = *binotata*, Guér.).
67. *M. concinna*, Smith. ♀. San Domingo.
68. *M. curta*, Cress. ♀. Cuba; Jamaica.
69. *M. curta*, var. *tibialis*, Cress. ♀. Cuba.
70. *M. deceptrix*, Smith. ♀. San Domingo.
71. *M. elongata*, Smith. ♂. San Domingo.
72. *M. flavitarsata*, Smith. ♂. St. Vincent; Grenada.
73. *M. martindalei*, Fox. Jamaica; St. Vincent.
74. *M. maura*, Cress. ♀. Cuba.
75. *M. minima*, Ashm. St. Vincent.
76. *M. multidens*, Fox. Jamaica.
77. *M. orbata*, Smith. ♂. San Domingo.
78. *M. palmeri*, Cress. Guadeloupe.
79. *M. pedalis*, Fox. ♂. Jamaica.
80. *M. poeyi*, Guérin. Cuba; Jamaica; Porto Rico.
81. *M. sedula*, Smith. ♀. San Domingo.
82. *M. singularis*, Cress. ♂. Cuba; Porto Rico.
83. *M. tridentata*, Ashm. ♂. St. Vincent.
84. *M. vitracii*, Par. Guadeloupe.

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Subfamily III. *ANTHIDIINÆ.*

None.

## Family X. STELIDIDÆ.

Subfamily I. *STELIDINÆ.*

None.

Subfamily II. *CŒLIOXINÆ.*

PASITES, Jurine.

85. *P. pilipes*, Cress. ♀. Cuba; Jamaica; Porto Rico.

CŒLIOXYS, Latreille.

86. *C. abdominalis*, Guér. St. Thomas; Cuba; Grenada; Grenadines; Porto Rico.
87. *C. producta*, Cress. Cuba.
88. *C. rufipes*, Guér. Cuba.
89. *C. spinosa*, Dewitz. Porto Rico.
90. *C. tridentata*, Fabr. ♂. W. I.
91. *C. uhleri*, Cress. ♀. Cuba.
92. *C. vigilans*, Smith. ♀. San Domingo.

## Family XI. PANURGIDÆ.

DUFOUREA, Lepeletier.

93. *D. subcyanea*, Ashm. ♂. St. Vincent; Grenada; Grenadines.

PANURGUS, Latreille.

94. *P. parvus*, Cress. Cuba; Porto Rico.

HYLÆOSOMA, Ashmead.

95. *H. longiceps*, Ashm. St. Vincent.

## Family XII. ANDRENIDÆ.

Subfamily I. *ANDRENINÆ.*

NOMIA, Latreille.

96. *N. robertsonii*, Cress. Cuba.
97. *N. wickhamii*, Ashm. ♂. Bahamas.

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Subfamily II. *HALICTINÆ.*

AUGOCHLORA, Smith.

98. *A. alcyone*, Smith. ♀. San Domingo.
99. *A. claviventris*, Ashm. ♂. St. Vincent.
100. *A. cyaneiviridis*, Ashm. St. Vincent.
101. *A. decora*, Smith. St. Vincent.
102. *A. elegans*, Cress. ♂. Cuba.
103. *A. magnifica*, Cress. ♂. Cuba.
104. *A. parva*, Cress. Cuba; Porto Rico.
105. *A. præclara*, Cress. Cuba; St. Vincent.
106. *A. regina*, Smith. Jamaica; St. Vincent; Grenada.

AGAPOSTEMON, Smith.

107. *A. femoralis*, Guér. ♂. Bahamas.
108. *A. festivus*, Cress. ♂. Cuba; Porto Rico.
109. *A. obscuratus*, Cress. ♀. Cuba.
110. *A. poeyi*, Lucas. ♀. Cuba; Porto Rico.
111. *A. semiviridis*, Cress. ♀. Cuba.
112. *A. viridulus*, Fabr. Cuba; Bahamas.

HALICTUS, Latreille.

113. *H. albitarsatus*, Ashm. Bahamas.
114. *H. auratus*, Ashm. St. Vincent.
115. *H. cyaneus*, Ashm. St. Vincent.
116. *H. gemmatus*, Smith. ♀. Jamaica; St. Vincent.
117. *H. plumbeus*, Ashm. St. Vincent.
118. *H. poeyi*, Lepel. ♂. Cuba; Porto Rico.
119. *H. sancti-vincenti*, Ashm. St. Vincent.

Subfamily III. *SPHECODINÆ.*

TEMNOSOMA, Smith.

120. *T. metallicum*, Smith. Jamaica.

SPHECODES, Latreille.

121. *S. nigritus*, Ashm. ♂. St. Vincent.
122. *S. solitarius*, Ashm. ♂. St. Vincent.
123. *S. thoracicus*, Ashm. St. Vincent.

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## Family XIII. COLLETIDÆ.

### MEGACILISSA, Smith.

124. *M. eximia*, Smith. ♂. St. Barthol.
125. *M. nigrescens*, Cress. ♀. Cuba.
126. *M. notabilis*, Smith. ♀. San Domingo.
127. *M. subaurata*, Cress. ♂. Cuba.

### COLLETES, Latreille.

128. *C. subemarginatus*, Cress. Cuba.

## Family XIV. PROSOPIDÆ.

None.

## Superfamily II. *SPHEGOIDEA.*

## Family XV. OXYBELIDÆ.

### NOTOGLOSSA, Dahlbom.

129. *N. analis*, Cress. (*Oxybelus*). Cuba.

## Family XVI. CRABRONIDÆ.

### CRABRO, Fabr. (sens. lat.).

130. *C. cubensis*, Cress. Cuba.
131. *C. crœsus*, Lepel. Cuba; Jamaica; Porto Rico.
132. *C. mayeri*, Dewitz. ♂. Porto Rico.

### PHYSOSCELIS, Lepeletier.

133. *P. auriceps*, Cress. (*Crabro*). Cuba.
134. *P. claviventris*, Cress. (*Crabro*). Cuba; Grenada.

## Family XVII. PEMPHREDONIDÆ.

### Subfamily I. *PEMPHREDONINÆ.*

### STIGMUS, Jurine.

135. *S. smithii*, Ashm. ♀. St. Vincent.
136. *S. thoracicus*, Ashm. ♀. St. Vincent; Grenada.

### Subfamily II. *PSENINÆ.*

### PSEN, Latreille.

137. *P. argentifrons*, Cress. Cuba; Jamaica.

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## Family XVIII. BEMBICIDÆ.

### BEMBIDULA, Burmeister.

138. *B. spinosa*, Fabr. Cuba.
139. *B. variegata*, Oliv. St. Vincent; Centr. Am.

### MONEDULA, Latreille.

140. *M. dissecta*, Dahlb. ♀. Cuba; S. Am.
141. *M. signata*, Linné. Grenada; St. Vincent; Bahamas; Porto Rico; Jamaica; S. Am.
142. *M. surinamensis*, De Geer. W. I.; S. and Centr. Am.

### BEMBEX, Fabricius.

143. *B. americana*, Fabr. W. I.; Centr. Am.
144. *B. armata*, Cress. Cuba.
145. *B. argentifrons*, Cress. Cuba; Jamaica.
146. *B. ciliata*, Fabr. Porto Rico.
147. *B. insularis*, Dahlb. W. I.; Cuba; St. Thomas.

## Family XIX. LARRIDÆ.

### Subfamily I. *LARRINÆ*.

### LARRA, Fabricius.

148. *L. fuliginosa*, Dahlb. Cuba.
149. *L. ignipennis*, Smith. Cuba.
150. *L. luteipennis*, Cress. Cuba; Grenada.
151. *L. rufipennis*, Fabr. St. Vincent.
152. *L. trifasciata*, Smith. ♀. Cuba; Porto Rico; St. Vincent.
153. *L. vinulenta*, Cress. St. Vincent; Cuba; Jamaica; Porto Rico.

### MOTES, Kohl.

154. *M. fulvipennis*, Guérin (*Larra*). Cuba; Jamaica; St. Vincent.
155. *M. splendens*, Ashm. ♀. St. Vincent.

### TACHYTES, Panzer.

156. *T. argentipes*, Smith. Grenada; St. Vincent.
157. *T. cubensis*, Cress. Cuba.
158. *T. insularis*, Cress. Cuba; Jamaica.
159. *T. tricinctus*, Fabr. St. Thomas.

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## Family XX. PHILANTHIDÆ.

### Subfamily I. *CERCERINÆ.*

### CERCERIS, Latreille.

160. *C. bilunata*, Cress. Cuba.
161. *C. cubensis*, Cress. Cuba.
162. *C. festiva*, Cress. Cuba.
163. *C. gratiosa*, Schlett. Cuba.
164. *C. krugii*, Dewitz. Porto Rico.
165. *C. levigata*, Smith. San Domingo.
166. *C. nigra*, Ashm. ♀. St. Vincent.
167. *C. triangulata*, Cress. Cuba.
168. *C. zonata*, Cress. ♀. Cuba.

### Subfamily II. *PHILANTHINÆ.*

### TRACHYPUS, Klug.

169. *T. gerstaeckeri*, Dewitz. Cuba; Porto Rico.

## Family XXI. TRYPOXYLIDÆ.

### TRYPOXYLON, Latreille.

170. *T. excavatum*, Cress. ♀. Cuba; Jamaica.
171. *T. subimpressum*, Smith. ♂. Grenada; San Domingo.

## Family XXII. MELLINIDÆ.

None.

## Family XXIII. NYSSONIDÆ.

### Subfamily I. *GORTYNINÆ.*

### HARPACTUS, Jurine.

172. *H. insularis*, Cress. Cuba.
173. *H. scitulus*, Cress. Cuba.

### Subfamily II. *ALYSONINÆ.*

### ALYSON, Jurine.

174. *A. aculeatus*, Cress. Cuba.

### Subfamily III. *NYSSONINÆ.*

### NYSSON, Latreille.

175. *N. armatus*, Cress. Cuba.

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Subfamily IV. *ASTATINÆ.*

ASTATUS, Latreille.

176. *A. insularis*, Cress. Cuba.

## Family XXIV. STIZIDÆ.

SPHECIUS, Dahlbom.

177. *S. hogardii*, Latr. Cuba; Bahamas; N. Am., Florida.

## Family XXV. SPHEGIDÆ.

Subfamily I. *SPHEGINÆ.*

SPHEX, Latreille.

178. *S. aurifluus*, Perty. Porto Rico; S. Am.; Brazil.
179. *S. caliginosus*, Klug. St. Vincent; S. Am.; Centr. Am.
180. *S. dorsalis*, Lepel. St. Vincent; Cuba; Jamaica; S. Am.
181. *S. fulvipectus*, Guér. ♂. Bahamas.
182. *S. fulviventris*, Guér. Jamaica; Cuba; Haiti.
183. *S. rufipes*, Lepel. Haiti.
184. *S. singularis*, Smith. St. Vincent; Jamaica; Centr. Am.

HARPACTOPUS, Smith.

185. *H. thomæ*, Fabr. St. Vincent; Cuba; Jamaica; Porto Rico; S. Am.; N. and Centr. Am.

Subfamily II. *AMMOPHILINÆ.*

AMMOPHILA, Kirby.

186. *A. annulatus*, Cress. Cuba.
187. *A. argentifrons*, Cress. Cuba.
188. *A. cementarius*, Drury. W. I.; Centr. and N. Am.
189. *A. guérinii*, D. T. (= *apicalis*, Guér.). Cuba.

Subfamily III. *SCELIPHRONINÆ.*

SCELIPHRON, Klug.

190. *S. annulatum*, Cress. Cuba.
191. *S. assimile*, Dahlb. Cuba.
192. *S. aurifluus*, Perty. Porto Rico; S. Am.
193. *S. fasciatum*, Lepel. St. Vincent; Bahamas.

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194. *S. fulvipes*, Cress. Cuba.
195. *S. lanieri*, Guér. Cuba.
196. *S. lugubre*, Christ. San Domingo.
197. *S. tau*, Beauv. San Domingo.

Subfamily IV. *PODIINÆ.*

PODIUM, Fabricius.

198. *P. fulvipes*, Cress. ♀. Cuba.
199. *P. opilinum*, Smith. Jamaica.
200. *P. petiolatum*, Drury. Jamaica.

## Family XXVI. AMPULICIDÆ.

None.

Superfamily III. *VESPOIDEA.*

## Family XXVII. POMPILIDÆ.

Subfamily I. *PEPSINÆ.*

PEPSIS, Fabricius.

201. *P. deuteroleuca*, Smith. St. Vincent; Grenada; S. Am., Brazil.
202. *P. domingensis*, Lepel. San Domingo; Haiti.
203. *P. heros*, Fabr. Porto Rico; S. Am., Brazil.
204. *P. ignicornis*, Cress. ♂. Cuba.
205. *P. rubra*, Drury. W. I.; N. Am.
206. *P. ruficornis*, Fabr. W. I.; Porto Rico.
207. *P. speciosus*, Fabr. W. I.; Porto Rico.
208. *P. sulphuricornis*, Beauv. San Domingo; United States.
209. *P. tau*, Beauv. San Domingo.
210. *P. terminata*, Dahlb. St. Vincent; Martinique; Cuba; S. Am., Brazil.

SALIUS, Fabricius.

211. *S. flavipennis*, Smith. Bahamas.
212. *S. nubeculus*, Cress. Cuba.
213. *S. pulchellus*, Cress. Cuba.

Subfamily II. *AGENIINÆ.*

PSEUDAGENIA, Kohl.

214. *P. bella*, Cress. Cuba.
215. *P. macra*, Cress. Cuba.
216. *P. violaceipes*, Cress. Cuba.

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Subfamily III. *POMPILINÆ.*

POMPILUS, Fabricius.

217. *P. æneopurpureus*, Fox. Jamaica.
218. *P. anceps*, Cress. Cuba; Porto Rico.
219. *P. amethystinus*, Taschb. W. I.; S. Am., Brazil, Columbia.
220. *P. bellus*, Cress. Porto Rico.
221. *P. concinnus*, Cress. Cuba; Porto Rico.
222. *P. coruscus*, Smith. San Domingo; Cuba.
223. *P. compressiventris*, Cress. Cuba.
224. *P. cressoni*, Dewitz. Porto Rico; Jamaica.
225. *P. cubensis*, Cress. Cuba; St. Vincent.
226. *P. dux*, D. T. (= *propinquus*, Fox). Jamaica.
227. *P. elegans*, Cress. Cuba.
228. *P. erythrus*, Smith. Jamaica.
229. *P. ferrugineus*, Dahlb. Porto Rico.
230. *P. frigidus*, Cress. Cuba; Mexico.
231. *P. fulgidus*, Cress. Cuba; Porto Rico.
232. *P. gundlachii*, Cress. ♀. Cuba.
233. *P. ignipennis*, Cress. Cuba; Porto Rico.
234. *P. insignis*, Cress. Cuba.
235. *P. juxtus*, Cress. Cuba; Grenada.
236. *P. mundus*, Cress. Cuba.
237. *P. nubeculatus*, Cress. Cuba.
238. *P. orbitalis*, Cress. ♀. Cuba.
239. *P. purpureipennis*, Cress. Cuba.
240. *P. pygidialis*, Kohl. Cuba; Mexico; S. Am.
241. *P. subargenteus*, Cress. (= ♂ *juxtus*, Cr.). ♂. Cuba; Grenada?
242. *P. terminatus*, Cress. Cuba.
243. *P. unicus*, Cress. ♂. Cuba.
244. *P. uniformis*, Cress. Cuba.

PŒCILOPOMPILUS, Ashmead.

245. *P. navus*, Cress. (*Pompilus*). Grenada; St. Vincent; N. Am., Georgia, Florida, California.

HEMISALIUS, Saussure.

246. *H. opacifrons*, Fox (= *compressa*, Fox). Jamaica; St. Vincent; Grenada.

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Subfamily IV. *PLANICEPINÆ.*

PLANICEPS, Latreille.

247. *P. collaris*, Cress. (= *troglodytes*, D. T.). Cuba.
248. *P. euferalis*, Fox. Jamaica; St. Vincent.
249. *P. tarsalis*, Ashm. Grenada; St. Vincent.

Subfamily V. *NOTOCYPHINÆ.*

None.

Subfamily VI. *CEROPALINÆ.*

CEROPALES, Latreille.

250. *C. clypeatus*, Cress. Cuba.
251. *C. cubensis*, Cress. Cuba; Grenada; Jamaica.

## Family XXVIII. VESPIDÆ.

POLISTES, Latreille.

252. *P. americanus*, Fabr. Jamaica; Porto Rico; Bahamas; S. Am.
253. *P. carnifex*, Fabr. Cuba; San Domingo; S. Am.
254. *P. cinctus*, Lepel. St. Vincent.
255. *P. cubensis*, Lepel. Cuba; Bahamas.
256. *P. incertus*, Cress. Cuba.
257. *P. lineatus*, Fabr. Cuba.
258. *P. minor*, Beauv. Bahamas.
259. *P. occidentalis*, Oliv. St. Vincent.
260. *P. versicolor*, Oliv. San Domingo.

POLYBIA, Lepeletier.

261. *P. cubensis*, Sauss. W. I.; Cuba; Porto Rico; Bahamas.
262. *P. fulvofasciatus*, De Geer. St. Thomas.
263. *P. mexicana*, Sauss. Porto Rico.
264. *P. occidentalis*, Oliv. St. Vincent.
265. *P. phthisica*, Fabr. Porto Rico; S. Am.

## Family XXIX. EUMENIDÆ.

DISCŒLIUS, Latreille.

266. *D. pulchellus*, Sauss. Jamaica.



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ZETHUS, Fabricius.

267. *Z. albopictus*, Smith. ♀. San Domingo.
268. *Z. aztecus*, Sauss. ♀. Bahamas.
269. *Z. jurinei*, Sauss. W. I.
270. *Z. poeyi*, Sauss. Cuba.
271. *Z. rufinodus*, Latr. W. I.; Porto Rico.

MONTEZUMIA, Saussure.

272. *M. marthæ*, Sauss. ♀. W. I.

EUMENES, Fabricius.

273. *E. abdominalis*, Drury. W. I.
274. *E. colona*, Sauss. Cuba; Haiti; San Domingo.
275. *E. cubensis*, Cress. Cuba.
276. *E. ferruginea*, Cress. Cuba.
277. *E. ornata*, Sauss. W. I.; Porto Rico.
278. *E. picta*, Smith. San Domingo.
279. *E. versicolor*. Sauss. Jamaica.

ODYNERUS, Latreille.

280. *O. antillarum*, Prov. Trinidad.
281. *O. apicalis*, Cress. Cuba.
282. *O. bucuensis*, Sauss. Cuba; Jamaica.
283. *O. cingulatus*, Cress. Cuba.
284. *O. consors*, Cress. Cuba.
285. *O. cubensis*, Sauss. Cuba.
286. *O. dejectus*, Cress. Cuba; Porto Rico.
287. *O. enyo*, Lepel. Cuba.
288. *O. fasciculatus*, Sauss. Cuba.
289. *O. figulus*, Sauss. Guadeloupe.
290. *O. grenadensis*, Ashm. Grenada.
291. *O. incommoda*, Sauss. Cuba.
292. *O. obliquus*, Cress. Cuba.
293. *O. proctus*, Cress. Cuba.
294. *O. sancti-vincenti*, Ashm. St. Vincent.
295. *O. simplicicornis*, Sauss. Cuba; Jamaica.
296. *O. spectabilis*, Sauss. Cuba.
297. *O. tibialis*, Sauss. ♀. Jamaica; Bahamas.

MONOBIELLA, Ashmead.

298. *M. atrata*, Fabricius (*Vespa*). Porto Rico.

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MONOBIA, Saussure.

299. *M. egregia*, Sauss. W. I.
300. *M. insularis*, Ashm. ♀. Canonan Isle, Grenadines.

## Family XXX. MASARIDÆ.

None.

## Family XXXI. CHRYSIDIDÆ.

Subfamily I. *PARNOPINÆ.*

None.

Subfamily II. *CHRYSIDINÆ.*

CHRYSIS, Fabricius.

301. *C. consimilis*, Cress. Cuba.
302. *C. dubia*, Cress. Cuba.
303. *C. insularis*, Guér. Cuba.
304. *C. subviridis*, Cress. Cuba.

TETRACHRYSIS, Lichtenstein.

305. *T. oblonga*, Cress. Cuba.
306. *T. purpuriventris*, Cress. Cuba.
307. *T. superba*, Cress. ♀. Cuba.

HOLOCHRYSIS, Lichtenstein.

308. *H. divergens*, Cress. Cuba.

Subfamily III. *HEDYCHRINÆ.*

HOLOPYGA, Dahlbom.

309. *H. dohrni*. Dahlb. Cuba.

HEDYCHRUM, Abeille.

310. *H. cyaneiventris*, Cress. Cuba.
311. *H. vernale*, Cress. Cuba.

Subfamily IV. *ELAMPINÆ.*

ELAMPUS, Spinola.

312. *E. viridis*, Cress. Cuba.

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## Family XXXII. BETHYLIDÆ.

### Subfamily I. *BETHYLINÆ.*

#### DISSOMPHALUS, Ashmead.

313. *D. bisculus*, Ashm. ♂. St. Vincent; Grenada.
314. *D. confusus*, Ashm. ♂. St. Vincent.
315. *D. politus*, Ashm. ♂. St. Vincent.
316. *D. tuberculatus*, Ashm. ♂. St. Vincent.

#### ISOBRACHIUM, Förster.

317. *I. albipes*, Ashm. ♂. St. Vincent.
318. *I. collinum*, Ashm. ♂. St. Vincent.

#### EPYRIS, Westwood.

319. *E. aurichalcea*, Westw. Cuba.
320. *E. incerta*, Ashm. ♂. St. Vincent.
321. *E. insularis*, Ashm. ♂. St. Vincent.
322. *E. planiceps*, Fabr. (Westw.). W. I.
323. *E. pygmæus*, Ashm. ♂. St. Vincent.

#### CONIOZUS, Förster.

324. *G. incompletus*, Ashm. ♀. St. Vincent; Grenada.
325. *G. nigrifemur*, Ashm. ♀. St. Vincent.
326. *G. sancti-vincenti*, Ashm. ♀. St. Vincent.

### Subfamily II. *EMBOLEMINÆ.*

None.

### Subfamily III. *DRYININÆ.*

#### LABEO, Haliday.

327. *L. grenadensis*, Ashm. ♂. Grenada.
328. *L. sancti-vincenti*, Ashm. ♂. St. Vincent.
329. *L. simulans*, Ashm. ♂. St. Vincent.

#### APHELOPUS, Dalman.

330. *A. albopictus*, Ashm. ♂. Grenada.

## Family XXXIII. TRIGONALIDÆ.

#### TRIGONALYS, Westwood.

331. *T. gundlachi*, Cress. ♂. Cuba.

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## Family XXXIV. SAPYGIDÆ.

None.

## Family XXXV. MYZINIDÆ.

### MYZINE, Latreille.

332. *M. albopictus*, Cress. ♂. Cuba.
333. *M. apicalis*, Cress. ♂. Cuba.
334. *M. ephippium*, Fabr. Porto Rico.
335. *M. lateralis*, Cress. ♀. Cuba.
336. *M. nitida*, Smith. Cuba; Jamaica; Bahamas.
337. *M. sexcincta*, Fabr. Porto Rico; N. Am.
338. *M. striata*, Cress. ♀. Cuba.

## Family XXXVI. SCOLIIDÆ.

### Subfamily I. *SCOLIINÆ.*

### DISCOLIA, Saussure.

339. *D. hecate*, Kirby. Trinidad.

### Subfamily II. *ELIDINÆ.*

### COMPSOMERIS, Lepeletier.

340. *C. atrata*, Fabr. Cuba; Jamaica; Porto Rico.
341. *C. ephippium*, Say. St. Vincent.
342. *C. fulvohirta*, Cress. Cuba; Jamaica.
343. *C. maculata*, Drury. Jamaica.
344. *C. plumipes*, Drury. Porto Rico.
345. *C. peregrina*, Lepel. St. Vincent.
346. *C. tricincta*, Fabr. Porto Rico.
347. *B. trifasciata*, Fabr. Cuba; Jamaica; Porto Rico; Bahamas.

## Family XXXVII. TIPHIIDÆ.

### TIPHIA, Fabricius.

348. *T. argentipes*, Cress. Cuba; St. Vincent; Porto Rico.
349. *T. nitida*, Smith. St. Vincent; Jamaica.

## Family XXXVIII. RHOPALOSOMIDÆ.

### RHOPALOSOMA, Cresson.

350. *R. poeyi*, Cress. Cuba; N. Am., Florida, N. Carolina, Kentucky, Missouri.

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## Family XXXIX. COSILIDÆ.

None.

## Family XL. THYNNIDÆ.

### METHOCA, Latreille.

351. *M. poeyi*, Guér. Cuba.

## Family XLI. MYRMOSIDÆ.

None.

## Family XLII. MUTILLIDÆ.

### MUTILLA, Linné (sens. lat.).

352. *M. americana*, Fabr. W. I.
353. *M. antiguensis*, Fabr. Antigua.
354. *M. ferrugata*, Fabr. ♀. Bahamas.
355. *M. palliceps*, Cress. ♀. Cuba.
356. *M. rubriceps*, Cress. ♀. Cuba.
357. *M. senex*, Guér. Cuba.
358. *M. wilsoni*, Cress. ♂. Cuba.

### TIMULLA, Ashmead.

359. *T. mediata*, Fabr. St. Vincent.
360. *T. rufiventris*, Fabr. St. Vincent.

### PSEUDOMETHOCA, Ashmead.

361. *P. unicincta*, Ashm. St. Vincent.

### SPHÆROPHTHALMA, Blake.

362. *S. cargilli*, Ckll. ♀. Jamaica.
363. *S. melancholica*, Smith. ♀. San Domingo.
364. *S. militaris*, Smith. ♀. Jamaica.
365. *S. nigriceps*, Cress. (=*florentinii*, D. T.). Cuba.
366. *S. senex*, Guér. ♂. Cuba.
367. *S. wilsonii*, Cress. Cuba.

## Superfamily IV. *FORMICOIDEA*.

## Family XLIII. DORYLIDÆ.

### ECITON, Latreille.

368 *E. klugii*, Shuck. W. I.
369. *E. antillarum*, Forel (? = *klugii*). ☿. Grenada.

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## Family XLIV. PONERIDÆ.

### PRIONOPELTA, Mayr.

370. *P. punctulata*, Mayr. ☿ ♂. St. Vincent.

### LEPTOGENYS, Rogers.

371. *L. arcuata*, Rogers. ♂. Grenada.
372. *L. falcata*, Rog. ☿ ♂. Cuba; St. Vincent.
373. *L. mucronata*, Forel. ☿. St. Vincent.
374. *L. pubiceps*, Emery. ☿ ♀. St. Vincent.

### PARAPONERA, Smith.

375. *P. clavata*, Fabr. W. I.

### PLATYTHYREA, Rogers.

376. *P. pruinosa*, Mayr. ☿ ♂. St. Vincent; Grenada.
377. *P. punctata*, Smith. San Domingo.

### PACHYCONDYLA, Smith.

378. *P. villosa*, Fabr. W. I.; N. Am., Texas.

### PONERA, Latreille.

379. *P. ergantandria*, Forel. ♀ ☿ ♂. St. Vincent.
380. *P. fœda*, Forel. ♀ ☿. St. Vincent.
381. *P. opaciceps*, Mayr. ☿. St. Vincent.
382. *P. punctatissima*, Koger.
var. *trigona*, Mayr. W. I.
var. *opacior*, Forel. ♀ ☿. St. Vincent.
383. *P. succedanea*, Roger. ♀ ☿ ♂. Cuba.
384. *P. stigma*, Fabr., var. *attrita* Forel. ♀ ☿ ♂. St. Vincent.

### PSEUDOMYRMA, Guérin.

385. *P. elongata*, Mayr. ☿. St. Vincent.
386. *P. flavidula*, Smith. ☿. St. Vincent; N. Am., Florida.
387. *P. gracilis*, Fabr. W. I.; Centr. Am.; N. Am., Texas.
388. *P. pallida*, Smith. W. I.; N. Am., Florida.

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## Family XLV. MYRMICIDÆ.

### Cremastogaster, Lund.

389. *C. brevispinosa*, Mayr, race *minutior*, Forel. St. Vincent.
390. *C. curvispinosa*, Mayr, var. *antillana*, Forel. ☿. St. Vincent.
var. *minutior*, Forel. ☿ ♀. St. Vincent.
391. *C. lineolata*, Say. W. I.; N. Am., Canada, United States.
392. *C. sanguinea*, Roger. ☿. Cuba.
393. *C. steinheili*, Forel. St. Thomas.

### Solenopsis, Westwood.

394. *S. azteca*, Forel. ☿. St. Vincent.
395. *S. castor*, Forel. ☿ ♀. St. Vincent.
396. *S. corticalis*, Forel. St. Thomas.
397. *S. exigua*, Forel. ☿. St. Vincent.
398. *S. geminata*, Fabr. ☿ ♀ ♂. St. Vincent; N. Am., Canada, United States.
399. *S. globularia*, Smith. ♀ ☿ ♂. St. Vincent.
400. *S. pollux*, Forel. ♀ ☿ ♂. St. Vincent.
401. *S. succinea*, Emery. ♀ ☿ ♂. St. Vincent.

### Wassmannia, Forel.

402. *W. auropunctata*, Roger. ♀ ☿ ♂. St. Vincent; Grenada.
403. *W. stigmoidea*, Mayr. ♀. Grenada.

### Tranopelta, Mayr.

404. *T. gilva*, Mayr. W. I.

### Tetramorium, Mayr.

405. *T. foreli*, Emery. ♀. St. Vincent.
406. *T. guineense*, Fabr. ☿ ♀ ♂. St. Vincent. (Cosmopolite.)
407. *T. simillimum*, Nyl. ♀ ☿. St. Vincent.

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### MONOMORIUM, Mayr.

408. *M. cinnabari*, Roger. ☿. Cuba.
409. *M. carbonarium*, Sm. ♀ ☿ ♂. W. I.; N. Am., United States.
410. *M. floricola*, Jard. ♀ ☿ ♂. St. Vincent.
411. *M. pharaonis*, L. W. I. (Cosmopolite.)
412. *M. minutum*, Mayr., race *ebeninum*, Forel. St. Vincent.

### MACROMISCHIA, Roger.

413. *M. iris*, Roger. ☿. Cuba.
414. *M. lugens*, Roger. ☿. Cuba.
415. *M. porphyritis*, Roger. ☿. Cuba.
416. *M. punitans*, Roger. ☿. Cuba.
417. *M. purpurata*, Roger. ☿. Cuba.
418. *M. squamifera*, Roger. ☿. Cuba.
419. *M. versicolor*, Roger. ☿. Cuba.

### CARDIOCONDYLA, Emery.

420. *C. emeryi*, Forel. ☿. St. Vincent.

### PHEIDOLE, Westwood.

421. *P. cubensis*, Mayr. ☿ ♃. Cuba.
422. *P. fallax*, Mayr. ☿ ♃. St. Thomas; St. Vincent.
423. *P. guilelmi-mulleri*, Forel.
    race *antillana*, Forel. ♀ ☿ ♂ ♃.
    var. *nigrescens*, Forel. ♀ ☿ ♂. St. Vincent.
424. *P. jelskii*, Mayr. ☿ ♃. St. Thomas; St. Vincent.
425. *P. flavens*, Rog. ☿ ♃. Cuba.
    var. *sculptior*, Forel. ♀ ☿ ♃. St. Vincent.
    race *sculptior grenadensis*, Forel. ♀ ☿ ♂ ♃. Grenada; St. Vincent.
    var. *vincentensis*, Forel. ♀ ☿ ♂ ♃. St. Vincent.
426. *P. godmani*, Forel. ♀ ☿ ♃. St. Vincent.
427. *P. megacephala*, Fabr. ♀ ☿ ♃. St. Vincent.
428. *P. orbica*, Forel. ♀ ☿ ♂ ♃. St. Vincent.
429. *P. radoszkowskii*, Mayr, var. *luteola*, Forel. ♀ ☿ ♂ ♃. St. Vincent.
430. *P. subarmata*, Mayr, var. *elongatula*, Forel. ♀ ☿ ♂ ♃. St. Vincent.
431. *P. susannæ*, Forel, race *obscurior*, Forel. ♀ ☿ ♂ ♃. St. Vincent.

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### Pogonomyrmex, Mayr.

432. *P. sallei*, Guérin. ♀ ☿ ♂. San Domingo.

## Family XLVI. CRYPTOCERIDÆ.

### Cryptocerus, Latreille.

433. *C. discocephalus*, var. *araneolus*, Smith. ☿. Grenada; St. Vincent.
434. *C. discocephalus*, Smith. ♀ ☿ ♂. Cuba.
435. *C. hamulus*, Roger. ☿. San Domingo.

### Epitritus, Emery.

436. *E. eminæ*, Emery. ♀ ☿. St. Thomas; St. Vincent.

### Strumigenys, Smith.

437. *S. alberti*, Forel. ☿ ♀. St. Vincent.
438. *S. eggersii*, Emery. ☿ ♀. St. Thomas.
439. *S. eggersii*, var. *vincentensis*, Forel. ♀. St. Vincent.
440. *S. gundlachii*, Roger. ☿ ♀. Cuba; St. Vincent.
441. *S. imitator*, Mayr. ♀. St. Vincent.
442. *S. margaritæ*, Forel. ☿ ♀ ♂. St. Vincent.
443. *S. membranifera*, Emery, race *simillima*, Em. ♀. St. Thomas.
444. *S. rogeri*, Emery. ♀ ☿. Cuba; St. Thomas.
445. *S. simillima*, Emery. ♀ ☿. St. Thomas.
446. *S. smithii*, Forel. ♀ ♂. Grenada; St. Vincent.

### Cyphomyrmex, Mayr.

447. *C. foxii*, Emery. ☿. Jamaica.
448. *C. rimosus*, Spinola. ☿ ☿ ♂. Cuba; Grenada; St. Vincent.

### Mycocepurus, Forel.

449. *M. smithii*, Forel. ♀. St. Vincent.

### Trachymyrmex, Forel.

450. *T. sharpi*, Forel. ☿. St. Vincent.

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ATTA, Fabricius.

451. *A. cephalotes*, Linné. W. I.; Centr. Am.; S. Am.
452. *A. insularis*, Guér. ♀ ☿ ♂. Cuba.

## Family XLVII. ODONTOMACHIDÆ.

ODONTOMACHUS, Latreille.

453. *O. hæmatodes*, Linné. ♀ ☿ ♂. W. I.; St. Vincent; N., Centr., and S. Am.
454. *O. hæmatodes*, L., var. *hirtiusculus*, Smith. ☿ ♀. St. Vincent.
455. *O. insularis*, Guér. Cuba; Haiti.

ANOCHETUS, Mayr.

456. *A. inermis*, André. ☿. Trinidad.
457. *A. mayri*, André. ♀ ☿. St. Thomas; St. Vincent.

STENOMYRMEX, Mayr.

458. *S. emarginatus*, Fabr. W. I.
459. *S. emarginatus*, Fabr., race *testaceus*, Forel. ☿ ♂. St. Vincent.

## Family XLVIII. DOLICHODERIDÆ.

DOLICHODERUS, Linné.

460. *D. lutosus*, Smith, var. *nigriventris*, Forel. ☿. St. Vincent.
461. *D. vestitus*, Mayr. ♀. St. Thomas.

TAPINOMA, Förster.

462. *T. melanocephala*, Fabr. ☿ ♀. St. Vincent.
463. *T. pruinosum*, Roger. ☿. Cuba.

DORYMYRMEX, Mayr.

464. *D. pyramicus*, Roger. ☿ ♂. St. Vincent; N. Am., United States.

IRIDOMYRMEX, Mayr.

465. *I. iniquus*, Mayr. ☿. St. Vincent.

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## Family XLIX. FORMICIDÆ.

### Subfamily I. *CAMPONOTINÆ.*

#### CAMPONOTUS, Mayr.

466. *C. auricomus*, Roger. ☿ ♀. St. Vincent.
467. *C. conspicuus*, Smith. ♀. Jamaica.
468. *C. gilviventris*, Roger. ☿. Cuba.
469. *C. inæqualis*, Roger. ♀ ☿. Cuba.
470. *C. planatus*, Roger. ♀ ☿ ♂. Cuba.
471. *C. ruficeps*, Fabr. ♀ ☿. St. Vincent.
472. *C. sexguttatus*, Fabr. ☿ ♀. W. I.; N. Am., Florida.
473. *C. sphæralis*, Roger. ☿. Cuba.
474. *C. sharpi*. Forel. ☿ ♀ ♂. St. Vincent.
475. *C. ustus*, Forel. ☿. St. Thomas.

#### CALOBOPSIS, Mayr.

476. *C. riehlii*, Roger. ☿. Cuba.

### Subfamily II. *FORMICINÆ.*

#### MYRMELACHISTA, Roger.

477. *M. ambigua*, Forel. ☿. St. Vincent.
478. *M. kraatzii*, Roger. ☿. Cuba.
479. *M. rogeri*, André. ☿. Cuba.

#### ACROPYGA, Roger.

480. *A.* (*Rhizomyrma*) *smithii*, Forel. ♀. St. Vincent.

#### PLAGIOLEPIS, Mayr.

481. *P. flavidula*, Roger. ☿. Cuba.

#### BRACHYMYRMEX, Mayr.

482. *B. heeri*, Forel, var. *obscurior*, Forel. ☿ ♀ ♂. St. Vincent; N. Am., United States.
483. *B. minutus*, Forel. ☿ ♀. St. Vincent.

#### PRENOLEPIS, Emery.

484. *P. anthracina*, Roger. ☿. Cuba.
485. *P. fulva*, Mayr, race *pubens*, Forel. ☿ ♀ ♂. St. Vincent.
486. *P. gibberosa*, Roger. ♀. Cuba.

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487. *P. guatemalensis*, Forel, race *antillana*, Forel. ☿ ♀ ♂. St. Vincent.
488. *P. longicornis*, Latr. ♀ ☿ ♂. St. Vincent.
489. *P. nodifera*, Mayr. ☿. W. I.
490. *P. steinheli*, Forel. ☿. St. Thomas.
491. *P. steinheli*, var. *minuta*, Forel. ☿ ♀ ♂. St. Vincent.

Superfamily V. *PROCTOTRYPOIDEA.*

Family L. PELECINIDÆ.

PELECINUS, Latreille.

492. *P. polyturator*, Drury. W. I.; Jamaica; N., Centr., and S. America.

Family LI. HELORIDÆ.

MONOMACHUS, Westwood.

493. *M. klugii*, Westw. W. I.; Centr. Am.

Family LII. PROCTOTRYPIDÆ.

PROCTOTRYPES, Latreille.

494. *P. antillarum*, Ashm. Grenada.

Family LIII. BELYTIDÆ.

None.

Family LIV. DIAPRIIDÆ.

Subfamily I. *SPILOMICRINÆ.*

IDIOTYPA, Förster.

495. *I. pallida*, Ashm. St. Vincent.

HEMILEXIS, Förster.

496. *H. latipennis*, Ashm. ♂. St. Vincent.

HEMILEXOIDES, Ashmead.

497. *H. filiformis*, Ashmead. St. Vincent.

TROPIDOPSIS, Ashmead.

498. *T. clavata*, Ashm. St. Vincent.

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PARAMESIUS, Westwood.

499. *P. thoracicus*, Ashm. St. Vincent; Grenada.

SPILOMICRUS, Westwood.

500. *S. aneurus*, Ashm. St. Vincent.
501. *S. vulgaris*, Ashm. St. Vincent.

Subfamily II. *DIAPRIINÆ.*

GALESUS, Curtis.

502. *G. bipunctatus*, Ashm. St. Vincent; Grenada.

LOXOTROPA, Förster.

503. *L. columbiana*, Ashm. St. Vincent.
504. *L. grenadensis*, Ashm. ♀. St. Vincent.
505. *L. pleuralis*, Ashm. ♀. Grenada.
506. *L. thoracica*, Ashm. ♀. St. Vincent.

TROPIDOPRIA, Ashmead.

507. *T. nigriceps*, Ashm. St. Vincent.
508. *T. pallida*, Ashm. St. Vincent.
509. *T. triangularis*, Ashm. St. Vincent.

ACANTHOPRIA, Ashmead.

510. *A. crassicornis*, Ashmead. Grenada.

DIAPRIA, Latreille.

511. *D. grenadensis*, Ashm. Grenada.
512. *D. melanopleura*, Ashm. ♂. Grenada.
513. *D. mellea*, Ashm. St. Vincent.
514. *D. peraffinis*, Ashm. ♀. Grenada.
515. *D. smithii*, Ashm. ♀. Grenada.
516. *D. unicolor*, Ashm. ♀. Grenada.

CERATOPRIA, Ashmead.

517. *C. flavipes*, Ashm. ♀. Grenada.
518. *C. grenadensis*, Ashm. ♀. Grenada.

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### TRICHOPRIA, Ashmead.

519. *T. affinis*, Ashmead. ♀. Grenada.
520. *T. atriceps*, Ashm. St. Vincent.
521. *T. bifoveata*, Ashm. ♀. Grenada.
522. *T. grenadensis*, Ashm. Grenada.
523. *T. insularis*, Ashm. St. Vincent.
524. *T. pleuralis*, Ashm. St. Vincent.

### PHÆNOPRIA, Ashmead.

525. *P. angulifera*, Ashm. ♂. Grenada.
526. *P. balthazari*, Ashm. ♀. Grenada.
527. *P. grenadensis*, Ashm. ♀. Grenada.
528. *P. magniclavata*, Ashm. ♀. Grenada.
529. *P. nigriclavata*, Ashm. ♀. Grenada.
530. *P. nigricornis*, Ashm. Grenada.
531. *P. simillima*, Ashm. St. Vincent; Grenada.
532. *P. subclavata*, Ashm. St. Vincent; Grenada.

## Family LV. CERAPHRODIDÆ.

#### Subfamily I. *CERAPHRONINÆ.*

### CERAPHRON, Jurine.

533. *C. basalis*, Ashm. ♀. Grenada.
534. *C. fumipennis*, Ashm. St. Vincent.
535. *C. grenadensis*, Ashm. ♀. Grenada.
536. *C. meridionalis*, Ashm. ♀. St. Vincent.
537. *C. politifrons*, Ashm. ♀. Grenada.
538. *C. rugifrons*, Ashm. ♀. Grenada.
539. *C. sancti-vincenti*, Ashm. ♀. St. Vincent.
540. *C. solitarius*, Ashm. ♀. St. Vincent.
541. *C. subopacus*, Ashm. ♀. Grenada.

### APHANOGMUS, Thomson.

542. *A. grenadensis*, Ashm. ♀. Grenada.
543. *A. insularis*, Ashm. ♀. Grenada.

## Family LVI. SCELIONIDÆ.

#### Subfamily I. *TELENOMINÆ.*

### PHANURUS, Thomson.

544. *P. affinis*, Ashm. ♀. St. Vincent.

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### TELENOMUS, Haliday.

545. *T. albitarsis*, Ashm. Grenada.
546. *T. confusus*, Ashm. ♀. St. Vincent; Grenada.
547. *T. connectans*, Ashm. Grenada.
548. *T. convergens*, Ashm. ♀. Grenada.
549. *T. consimilis*, Ashm. ♀. Grenada.
550. *T. cubiceps*, Ashm. ♀. St. Vincent.
551. *T. difformis*, Ashm. St. Vincent.
552. *T. flavicornis*, Ashm. St. Vincent.
553. *T. flaviventris*, Ashm. Grenada; Jamaica.
554. *T. flavopetiolatus*, Ashm. St. Vincent.
555. *T. fuscicornis*, Ashm. Grenada.
556. *T. fuscipennis*, Ashm. ♂. St. Vincent.
557. *T. grenadensis*, Ashm. ♀. Grenada.
558. *T. impressus*, Ashm. St. Vincent.
559. *T. latifrons*, Ashm. ♀. Grenada.
560. *T. longiclavatus*, Ashm. ♀. Grenada.
561. *T. luteipes*, Ashm. Grenada.
562. *T. magniclavatus*, Ashm. ♂. St. Vincent; Grenada.
563. *T. medius*, Ashm. ♀. St. Vincent
564. *T. megacephalus*, Ashm. ♀. St. Vincent; Grenada.
565. *T. meridionalis*, Ashm. ♀. St. Vincent.
566. *T. nigriclavatus*, Ashm. ♀. Grenada.
567. *T. nigrocoxalis*, Ashm. ♀. St. Vincent.
568. *T. pectoralis*, Ashm. ♂. St. Vincent.
569. *P. pygmæus*, Ashm. ♀. St. Vincent.
570. *T. sancti-vincenti*, Ashm. St. Vincent.
571. *T. scaber*, Ashm. ♀. St. Vincent; Grenada.
572. *T. smithii*, Ashm. St. Vincent.

### TRISSOLCUS, Ashmead.

573. *T. laticeps*, Ashm. ♀. St. Vincent.

## Subfamily II. *TELEASINÆ.*

### PROSACANTHA, Nees.

574. *P. brevispina*, Ashm. ♂. St. Vincent.
575. *P. sublineata*, Ashm. ♂. St. Vincent.
576. *P. tibialis*, Ashm. ♂. St. Vincent.

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ACOLOIDES, Howard.

577. *A. fasciipennis*, Ashm. ♀. St. Vincent.
578. *A. ochraceus*, Ashm. ♀. St. Vincent; Grenada.
579. *A. subfuscus*, Ashm. ♂. St. Vincent.

GRYON, Haliday.

580. *G. basicinctus*, Ashm. ♀. Grenada.

HOPLOGRYON, Ashmead.

581. *H. pallipes*, Ashm. ♀. Grenada.

Subfamily III. *SCELIONINÆ.*

CALOTELEIA, Westwood.

582. *C. ænea*, Ashm. ♀. St. Vincent.
583. *C. dorsalis*, Ashm. ♀. Grenada.
584. *C. elongata*, Ashm. ♀. St. Vincent.
585. *C. grenadensis*, Ashm. ♀. Grenada.
586. *C. maculipennis*, Ashm. St. Vincent; Grenada.
587. *C. nigriceps*, Ashm. ♀. Grenada.
588. *C. ocularis*, Ashm. St. Vincent.
589. *C. punctata*, Ashm. St. Vincent.
590. *C. puncticeps*, Ashm. St. Vincent.
591. *C. striatifrons*, Ashm. ♀. Grenada.

MACROTELEIA, Westwood.

592. *M. carinata*, Ashm. ♀. St. Vincent.
593. *M. erythrogaster*, Ashm. ♀. St. Vincent.
594. *M. grenadensis*, Ashm. ♂. Grenada.
595. *M. sancti-vinceni*, Ashm. ♀. St. Vincent.

CALLISCELIO, Ashmead.

596. *C. laticinctus*, Ashm. ♀. St. Vincent

CHROMOTELEIA, Ashmead.

597. *C. semicyanea*, Ashm. St. Vincent.

OPISTHACANTHA, Ashmead.

598. *O. pallida*, Ashm. St. Vincent.
599. *O. polita*, Ashm. ♀. St. Vincent.



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LAPITHA, Ashmead.

600. *L. spinosa*, Ashm. ♀. St. Vincent; Grenada.

CACUS, Riley.

601. *C. insularis*, Ashm. ♂. St. Vincent; Grenada.
602. *C. laticinctus*, Ashm. St. Vincent.

ANTERIS, Förster.

603. *A. rufipes*, Ashm. St. Vincent; Grenada.
604. *A. striatifrons*, Ashm. ♀. Grenada.

CREMASTOBÆUS, Ashmead.

605. *C. niger*, Ashm. St. Vincent.
606. *C. annulipes*. Ashm. ♂. Grenada.

EMBIDOBIA, Ashmead.

607. *E. urichii*, Ashm. Trinidad.

HADRONOTUS, Förster.

608. *H. agilis*, Ashm. ♀. Grenada.
609. *H. atrocoxalis*, Ashm. ♀. Grenada.
610. *H. bicolor*, Ashm. ♀. St. Vincent.
611. *H. carinatifrons*, Ashm. ♀. St. Vincent; N. Am., Illinois.
612. *H. grenadensis*, Ashm. ♂. Grenada.
613. *H. insularis*, Ashm. St. Vincent.
614. *H. politus*, Ashm. ♀. St. Vincent.
615. *H. rugosithorax*, Ashm. ♀. Grenada.

IDRIS, Förster.

616. *I. ænea*, Ashm. St. Vincent.

SCELIO, Latreille.

617. *S. insularis*, Ashm. St. Vincent; Grenada.
618. *S. thoracicus*, Ashm. St. Vincent.

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## Family LVII. PLATYGASTERIDÆ.

### Subfamily I. *INOSTEMMINÆ.*

#### INOSTEMMA, Haliday.

619. *I. bicornuta*, Ashm. ♀. St. Vincent.
620. *I. simillima*, Ashm. ♀. St. Vincent; Grenada.

#### ACEROTA, Förster.

621. *A. confusa*, Ashm. St. Vincent.

### Subfamily II. *PLATYGASTERINÆ.*

#### AMBLYASPIS, Förster.

622. *A. grenadensis*, Ashm. ♂. Grenada.
623. *A. nigricornis*, Ashm. St. Vincent.
624. *A. verticellatus*, Ashm. St. Vincent.
625. *A. xanthochroa*, Ashm. ♀. Grenada.
626. *X. xanthopus*, Ashm. Grenada; St. Vincent.
627. *A. brunneus*, Ashm. ♀. Grenada.
628. *A. ruficornis*, Ashm. ♀. Grenada.
629. *A. triangularis*, Ashm. ♀. St. Vincent; Grenada.

#### LEPTACIS, Förster.

630. *L. erythropus*, Ashm. ♂. St. Vincent.
631. *L. obscuripes*, Ashm. ♂. St. Vincent; Grenada.

#### POLYMECUS, Förster.

632. *P. grenadensis*, Ashm. ♀. Grenada.
633. *P. insularis*, Ashm. ♀. St. Vincent.
634. *P. macrurus*, Ashm. ♀. Grenada.

#### SACTOGASTER, Förster.

635. *S. affinis*, Ashm. ♀. St. Vincent; Grenada.
636. *S. flavipes*, Ashm. St. Vincent.
637. *S. rufipes*, Ashm. ♀. St. Vincent; Grenada.

#### CŒLOPELTA, Ashmead.

638. *C. mirabilis*, Ashm. ♀. St. Vincent.

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SYNOPEAS, Ashmead.

639. *S. dubius*, Ashm. ♂. St. Vincent.
640. *S. flavipes*, Ashm. Grenada.

ANOPEDIAS, Förster.

641. *A. conica*, Ashm. St. Vincent.

TRICHASIS, Förster.

642. *T. rubicola*, Ashm. St. Vincent; N. Am., Dist. Columbia.

POLYGNOTUS, Förster.

643. *P. gracilicornis*, Ashm. ♂. St. Vincent.
644. *P. insularis*, Ashm. St. Vincent.
645. *P. laticlavus*, Ashm. ♂. St. Vincent.
646. *P. meridionalis*, Ashm. St. Vincent.
647. *P. pallidicoxalis*, Ashm. ♂. St. Vincent.

Superfamily VI. *CYNIPOIDEA.*

Family LVIII. FIGITIDÆ.

Subfamily I. *FIGITINÆ.*

SOLENASPIS, Ashmead.

648. *S. bifoveolata*, Cress. Cuba; St. Vincent; Grenada; S. Am.
649. *S. rufipes*, Cress. Cuba.

Subfamily II. *ONYCHIINÆ.*

None.

Subfamily III. *ANACHARINÆ.*

None.

Subfamily IV. *LIOPTERINÆ.*

None.

Subfamily V. *EUCŒLINÆ.*

EUCŒLIDIA, Ashmead.

650. *E. canadensis*, Ashm. St. Vincent; Grenada; N. Am., Canada, Kansas, Dist. Columbia.

GRONOTOMA, Förster.

651. *G. insularis*, Ashm. ♀. Grenada.

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### DIGLYPHOSEMA, Förster.

652. *D. flavipes*, Ashm. ♀. St. Vincent; Grenada.

### DICERATASPIS, Ashmead.

653. *D. grenadensis*, Ashm. Grenada.

### ERISPHAGIA, Förster.

654. *E. nigriceps*, Ashm. ♀. Grenada.

### COTHONASPIS, Hartig.

655. *C. atricornis*, Ashm. ♀. Grenada.

### LEPTOPELINA, Förster.

656. *L. minuta*, Ashm. St. Vincent.

### KLEIDOTOMA, Westwood.

657. *K. atrocoxalis*, Ashm. ♀. Grenada.
658. *K. bipunctata*, Ashm. Grenada.
659. *K. insularis*, Ashm. ♀. St. Vincent; Grenada.
660. *K. marginalis*, Ashm. ♀. Grenada.
661. *K. nana*, Ashm. Grenada.
662. *K. pygidialis*, Ashm. ♀. Grenada.
663. *K. smithii*, Ashm. Grenada.

### TETRARHAPTA, Förster.

664. *T. rufipes*, Ashm. ♀. Grenada.

### PENTACRITA, Förster.

665. *P. coxalis*, Ashm. ♀. Grenada.
666. *P. obscuripes*, Ashm. St. Vincent.
667. *P. proxima*, Ashm. ♀. Grenada.

### HEXACOLA, Förster.

668. *H. dubia*, Ashm. ♀. Grenada.
669. *H. modesta*, Ashm. St. Vincent.
670. *H. sancti-vincenti*, Ashm. St. Vincent.
671. *H. solitaria*, Ashm. St. Vincent.

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### HEPTAMERIS, Förster.

672. *H. flavipes*, Ashm. ♀. Grenada.
673. *H. rufipes*, Ashm. ♀. St. Vincent.

### PARAMOIEA, Ashmead.

674. *P. heptatoma*, Ashm. ♀. Grenada.

### HYPOLETHRIA, Förster.

675. *H. longicornis*, Ashm. ♂. St. Vincent.

### AGLAOTOMA, Förster.

676. *A. basalis*, Ashm. St. Vincent; Grenada.
677. *A. longicornis*, Ashm. St. Vincent; Grenada.
678. *A. nigriceps*, Ashm. ♀. Grenada.
679. *A. pallida*, Ashm. ♀. St. Vincent; Grenada.
680. *A. similis*, Ashm. Grenada.
681. *A. tricolor*, Ashm. ♀. Grenada.
682. *A. variabilis*, Ashm. ♀. St. Vincent; Grenada.

### GANASPIS, Förster.

683. *G. apicalis*, Ashm. St. Vincent.
684. *G. atriceps*, Ashm. St. Vincent.
685. *G. iridipennis*, Ashm. ♀. Grenada.

### CHRESTOSEMA, Förster.

686. *C. flavipes*, Ashm. ♀. Grenada.
687. *C. pallidipes*, Ashm. ♀. Grenada; St. Vincent.

### DIRANCHIS, Förster.

688. *D. grenadensis*, Ashm. ♀. Grenada.
689. *D. flavipes*, Ashm. ♀. Grenada.

### RHOPTROMERIS, Förster.

690. *R. atriclavata*, Ashm. ♀. Grenada.

### ANECTOCLIS, Förster.

691. *A. rufipes*, Ashm. ♀. St. Vincent.

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TRYBLIOGRAPHA, Förster.

692. *T. xanthopoda*, Ashm. Grenada.

ACANTHEUCŒLA, Ashmead.

693. *A. armata*, Cress. ♀. (Cynips.) Cuba.

EUCŒLA, Westwood.

694. *E. aliena*, Ashm. ♀. Grenada.
695. *E. atriceps*, Ashm. ♀. Grenada.
696. *E. canaliculata*, Ashm. ♀. St. Vincent; Grenada.
697. *E. cressonii*, D. T. (= *carinata*, Cr.). Cuba; Trinidad; St. Vincent; Grenada.
698. *E. ferruginea*, Ashm. ♂. Grenada.
699. *E. inconstans*, Ashm. ♀. Grenada.
700. *E. nigriceps*, Ashm. ♂. Grenada.
701. *E. obliterata*, Ashm, ♀. Grenada.
702. *E. ovalis*, Ashm. ♀. St. Vincent; Grenada.
703. *E. perplexa*, Ashm. ♀. Grenada.
704. *E. unifoveata*, Ashm. ♀. Grenada.

HEPTAMEROCERA, Ashmead.

705. *H. aliena*, Ashm. ♀. Grenada.
706. *H. bicolor*, Ashm. ♀. Grenada.
707. *H. flavicornis*, Ashm. ♀. Grenada.
708. *H. gracilicornis*, Ashm. ♀. Grenada.
709. *H. robusta*, Ashm. ♀. Grenada.
710. *H. xanthognatha*, Ashm. ♀. Grenada.

HEXAPLASTA, Förster.

711. *H. affinis*, Ashm. ♀. Grenada.
712. *H. atriceps*, Ashm. ♀. St. Vincent; Grenada.
713. *H. brunneiclavata*, Ashm. Grenada.
714. *H. consimilis*, Ashm. Grenada.
715. *H. crassinervis*, Ashm. ♀. Grenada.
716. *H. dolichomera*, Ashm. ♂. St. Vincent.
717. *H. dubiosa*, Ashm. ♀. Grenada.
718. *H. hexomera*, Ashm. ♀. Grenada.
719. *H. incerta*, Ashm. ♀. St. Vincent.
720. *H. incongrua*, Ashm. ♀. Grenada.
721. *H. instabilis*, Ashm. St. Vincent.

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722. *H. longicornis*, Ashm. ♀. Grenada.
723. *H. melanocera*, Ashm. Grenada.
724. *H. modesta*, Ashm. St. Vincent; Grenada.
725. *H. pleuralis*, Ashm. ♀. Grenada.
726. *H. proxima*, Ashm. Grenada.
727. *H. quadripunctata*, Ashm. ♀. Grenada.
728. *H. rufolateralis*, Ashm. Grenada.
729. *H. sancti-vincenti*, Ashm. ♀. St. Vincent; Grenada.
730. *H. striatiscutellata*, Ashm. ♀. St. Vincent.
731. *H. tenuicornis*, Ashm. St. Vincent.
732. *H. unifoveata*, Ashm. St. Vincent.

PENTAMEROCERA, Ashmead.

733. *P. angularis*, Ashm. ♀. Grenada.
734. *P. connectans*, Ashm. ♀. Grenada.
735. *P. distinguenda*, Ashm. ♀. Grenada.
736. *P. erythropleura*, Ashm. ♀. Grenada.
737. *P. lateralis*, Ashm. ♀. Grenada.
738. *P. nanella*, Ashm. ♀. Grenada.
739. *P. sexpunctata*, Ashmead. ♀. Grenada.

TETRAMEROCERA, Ashmead.

740. *T. variabilis*, Ashm. ♀. Grenada.

Subfamily VI. *ALLOTRIINÆ.*

None.

Family LIX. CYNIPIDÆ.

None.

Superfamily VII. *CHALCIDOIDEA.*

Family LX. AGAONIDÆ.

BLASTOPHAGA, Gravenhorst.

741. *B. insularis*, Ashm. ♀. St. Vincent.
742. *B. picipes*, Ashm. ♀. St. Vincent.

TETRAPUS, Mayr.

743. *T. antillarum*, Ashm. ♀. St. Vincent.

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## Family LXI. TORYMIDÆ.

### Subfamily I. *IDARNINÆ.*

#### IDARNES, Walker.

744. *I. carme*, Walk. ♀. St. Vincent; Grenada.
745. *I. flavicollis*, Mayr. Bahamas; S. Am., Brazil.

#### COLYOSTICHUS, Mayr.

746. *C. auratus*, Ashm. ♂. St. Vincent.
747. *C. brevicaudus*, Mayr. ♀. St. Vincent; S. Am., Brazil.
748. *C. flavus*, How. ♀. Grenada.

#### SYCOPHILA, Walker.

749. *S. bicolor*, Ash. ♀. St. Vincent; N. Am., Florida.
750. *S. incerta*, Ashm. St. Vincent; N. Am., Florida.

#### PAPHAGUS, Walker (?). Position uncertain.

751. *P. sidero*, Walker. St. Vincent.

### Subfamily II. *TORYMINÆ.*

#### LOCHITES, Förster.

752. *L. auriceps*, Ash. St. Vincent.

#### SYNTOMASPIS, Förster.

753. *S. punctifrons*, Ashm. ♂. St. Vincent; Grenada.

#### TORYMUS, Dalman.

754. *T. pallidipes*, Ashm. ♀. St. Vincent; Grenada.
755. *T. rugoso-punctatus*, Ashm. ♀. St. Vincent.
756. *T. ventralis*, How. ♀. Grenada.

### Subfamily III. *MONODONTOMERINÆ.*

#### PHYSOTHORAX, Mayr.

(*Physothorax*, Mayr. ♂.)

(*Damorus*, Mayr, *nec* Walker. ♀.)

757. *P. variabilis*, Mayr. St. Vincent; S. Am., Brazil.
758. *P. pallidus*, Ashm. St. Vincent; Grenada.

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Subfamily IV. *MEGASTIGMINÆ.*

None.

Subfamily V. *ORMYRINÆ.*

None.

## Family LXII. CHALCIDIDÆ.

Subfamily I. *LEUCOSPIDINÆ.*

LEUCOSPIS, Fabricius.

759. *L. affinis*, Say (=*Poeyi*, Guér.). Cuba; N. Am., Canada, United States.
760. *L. cayennensis*, Westw. St. Thomas; S. Am., Brazil.
761. *L. pediculata*, Guér. Cuba.

Subfamily II. *CHALCIDINÆ.*

PODAGRION, Spinola.

762. *P. brasiliensis*, How. St. Vincent; Grenada; S. Am., Brazil.

PHASGONOPHORA, Westwood.

763. *P. insularis*, Cress. ♀. Cuba.

CHALCIS, Fabricius.

764. *C. annulatus*, Fabr. W. I.; Cuba; St. Vincent; Grenada; S. Am., Brazil.
765. *C. incerta*, Cress. Cuba; Jamaica.
766. *C. robusta*, Cress. Cuba; Jamaica; Porto Rico; N. Am., Florida.

SPILOCHALCIS, Thomson.

767. *S. femorata*, Fabr. Cuba; St. Vincent; Grenada; Porto Rico; S Am., Brazil; N. Am., Mexico.
768. *S. fulvescens*, Walk. St. Vincent.
769. *S. misturata*, How. ♀. St. Vincent.
770. *S. nigrita*, How. Grenada.
771. *S. transiliva*, Walk. Cuba; Grenada; N. Am., Florida.

SMICRA, Spinola.

772. *S. ampyx*, Walk. Cuba.
773. *S. coccinea*, Cress. ♀. Cuba.
774. *S. cressonii*, How. Grenada.
775. *S. eubule*, Cress. Cuba.

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776. *S. emarginata*, Fabr. Porto Rico; N. Am., Florida.
777. *S. flavopicta*, Cress. Porto Rico; N. Am., Florida.
778. *S. fidus*, Walk. Cuba.
779. *S. gundlachii*, Cress. Cuba.
780. *S. ignea*, Cress. Cuba; Porto Rico.
781. *S. immaculata*, Cress. Cuba.
782. *S. intermedia*, Cress. Cuba.
783. *S. lanieri*, Guér. Cuba.
784. *S. pallens*, Cress. Cuba.
785. *S. petiolata*, Cress. Cuba.
786. *S. pratinas*, Walk. Cuba.
787. *S. scutellaris*, Cress. Cuba.

EPITRANUS, Walker.

788. *E. castaneus*, Cress. Cuba.
789. *E. fulvescens*, Walk. St. Vincent.

ANTROCEPHALUS, Kirby.

790. *A. punctigerus*, Fabr. St. Vincent; Grenada; S. Am., Brazil.

NOTASPIDIUM, Dalla Torre (=*Notaspis*, Walker).

791. *N. formiciformis*, Walk. St. Vincent; Grenada.

## Family LXIII. EURYTOMIDÆ.

DECATOMA, Spinola.

792. *D. oretelia*, Walk. ♀. St. Vincent.

SYSTOLE, Walker.

793. *S. abnormis*, Ashm. ♀. St. Vincent.

RILEYA, Ashmead.

(=*Ashmeadia*, Howard.)

794. *R. abnormicornis*, Ashm. ♂. St. Vincent.
795. *R. collaris*, How. ♂. Grenada.
796. *R. insularis*, Ashm. St. Vincent.
797. *R. megastigma*, Ashm. ♀. St. Vincent; Grenada.
798. *R. pallidipes*, Ashm. ♂. St. Vincent.
799. *R. pulchra*, Ashm. St. Vincent; Grenada.

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BEPHRATA, Cameron.

800. *B. cubensis*, Ashm. ♀. Cuba.
801. *B. cultriformis*, Ashm. ♀. St. Vincent.

DECATOMIDEA, Ashmead.

802. *D. compacta*, How. ♀. Grenada.
803. *D. pallidicornis*, Ashm. St. Vincent.

CHRYSEIDA, Spinola.

804. *C. aurata*, Ashm. ♀. St. Vincent.

EURYTOMA, Illiger.

805. *E. cressonii*, How. Grenada.
806. *E. howardii*, D. T. (=*Mayri*, How). Grenada.
807. *E. insularis*, Ashm. St. Vincent.
808. *E. maculiventris*, Ashm. St. Vincent.
809. *E. peraffinis*, Ashm. St. Vincent.
810. *E. walshii*, How. Grenada.

EURYTOMOCHARIS, Ashmead.

811. *E. minima*, Ashm. St. Vincent.

EUOXYSOMA, Ashmead.

812. *E. vittatum*, How. ♀. Grenada.

ISOSOMODES, Ashmead.

813. *I. gigantea*, Ashm. St. Vincent; Grenada; N. Am., Florida, District of Columbia, Virginia.

ISOSOMA, Walker.

814. *I. heteromera*, Ashm. St. Vincent.

## Family LXIV. PERILAMPIDÆ.

PERILAMPUS, Latreille.

815. *P. parvus*, How. ♀. Grenada.
816. *P. politifrons*, How. ♂. Grenada; St. Vincent.

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## Family LXV. EUCHARIDÆ.

### ORASEMA, Cameron.

817. *O. cameronii*, How. ♀. Grenada.
818. *O. minutissima*, How. Grenada.
819. *O. smithii*, How. ♀. Grenada.
820. *O. stramineipes*, Cam. St. Vincent; N. Am.; Mexico.

### CHALCURA, Kirby.

821. *C. americana*, How. ♀. St. Vincent.

### STIBULA, Spinola.

822. *S. grenadensis*, How. ♀. Grenada.

### KAPALA, Cameron.

823. *K. furcata*, Fabr. Grenada; St. Vincent; S. Am., Brazil; N. Am., Mexico, Georgia.
824. *K. terminalis*, Ashm. ♂. Cuba.

## Family LXVI. MISCOGASTERIDÆ.

### Subfamily I. *PIRENINÆ.*

### HERBERTIA, Howard.

825. *H. lucens*, How. Grenada; St. Vincent.

### PROTOLEPSIA, Howard.

826. *E. compacta*, How. Grenada; St. Vincent.

### Subfamily II. *TRIDYMINÆ.*

### TRIDYMUS, Ratzeburg.

827. *T. solitarius*, Ashm. ♂. St. Vincent.

### HEMITRICHUS, Thomson.

828. *H. variipes*, Ashm. ♂. St. Vincent.

### PICROSCYTUS, Thomson.

829. *P. nigrocyaneus*, Ashm. ♀. St. Vincent.

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Subfamily III. *MISCOGASTERINÆ.*

HALTICOPTERA, Spinola.

830. *H. subpetiolata*, How. ♂. Grenada.

Subfamily IV. *LELAPINÆ.*

LELAPS, Haliday.

831. *L. flavescens*, Ashm. Grenada; St. Vincent.
832. *L. pulchricornis*, Hal. Grenada; St. Vincent.

## Family LXVII. CLEONYMIDÆ.

Subfamily I. *CHALCEDECTINÆ.*

EUCHRYSIA, Westwood.

833. *E. busckii*, Ashm. ♀. Porto Rico.

Subfamily II. *CLEONYMINÆ.*

ACROCORMUS, Förster.

834. *A. megastigmus*, Ashm. St. Vincent; Grenada.

Subfamily III. *PELECINELLINÆ.*

None.

Subfamily IV. *COLOTRECHNINÆ.*

None.

## Family LXVIII. ENCYRTIDÆ.

Subfamily I. *EUPELMINÆ.*

METAPELMA, Westwood.

835. *M. cubensis*, Ashm. ♀. Cuba.

CALOSOTER, Walker.

836. *C. chrysideus*, Ashm. ♂. St. Vincent.

IDOLEUPELMUS, Ashmead.

837. *I. annulicornis*, Ashm. ♀. St. Vincent.

ISCHNOPSIS, Ashmead.

838. *I. ophthalmica*, Ashm. ♀. St. Vincent.

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LECANIOBIUS, Ashmead.

839. *L. cockerellii*, Ashm. ♀. Antigua; Porto Rico.

EUPELMUS, Dalman.

840. *E. albomaculatus*, Ashm. St. Vincent.
841. *E. cyaneicollis*, Ashm. St. Vincent.
842. *E. cupreicollis*, Ashm. ♀. St. Vincent.
843. *E. pallidipes*, Ashm. ♀. St. Vincent; Grenada.
844. *E. reticulatus*, How. ♂. Grenada.
845. *E. sulcatus*, Ashm. St. Vincent.

ANASTATUS, Motschulsky.

846. *R. alboclavus*, Ashm. St. Vincent.
847. *A. aurifrons*, Ashm. St. Vincent.

TANAOSTIGMODES, Ashmead.

848. *T. mayri*, Ashm. ♂. Grenada.

Subfamily II. *ENCYRTINÆ.*

Tribe I. ECTROMINI.

LEPTOMASTIX, Förster.

849. *L. dactylopii*, How. Grenada; St. Vincent; N. Am., District of Columbia.

HABROLEPOIDEA, Howard.

850. *H. glauca*, How. Grenada.

ANAGYRUS, Howard.

851. *A. pulchricornis*, How. ♀. Grenada.
852. *A. terebratus*, How. ♀. Grenada.

Tribe II. EUCOMYTINI.

EUCOMYS, Förster (= *Comys*, Förster).

853. *E. bicolor*, How. Grenada; N. Am., United States.

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Tribe III. ENCYRTINI.

ARCHINUS, Howard.

854. *A. occupatus*, How. ♀. Grenada.

COPIDOSOMA, Ratzeburg.

855. *C. diversicornis*, How. Grenada.

ÆNASIUS, Walker.

856. *A. hyettus*, Walk. St. Vincent; Grenada.

BOTHRIOTHORAX, Ratzeburg.

857. *B. insularis*, How. Grenada.

ARATUS, Howard.

858. *A. scutelattus*, How. ♂. Grenada.

APHYCUS, Mayr.

859. *A. amœnus*, How. ♂. Grenada.
860. *A. flavus*, How. Grenada; N. Am., Florida.

BLASTOTHRIX, Mayr.

861. *B. insolitus*, How. ♀. Grenada.

MICROTERYS, Thomson.

862. *M. tiliaris*, Dalm. ♀. St. Vincent; Europe.

ENCYRTUS, Dalman.

863. *E. argentipes*, How. ♀. St. Vincent.
864. *E. conformis*, How. Grenada.
865. *E. convexus*, How. ♂. Grenada.
866. *E. crassus*, How. ♀. St. Vincent.
867. *E. flaviclavus*, How. ♀. St. Vincent.
868. *E. gargaris*, Walk. ♂. St. Vincent.
869. *E. hirtus*, How. St. Vincent.
870. *E. moderatus*, How. ♀. Grenada.
871. *E. nitidus*, How. ♀. St. Vincent.
872. *E. quadricolor*, How. ♂. St. Vincent.

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873. *E. rotundiformis*, How. ♀. Grenada.
874. *E. sordidus*, How. ♀. Grenada.
875. *E. submetallicus*, How. ♀. Grenada.

TANAONEURA, Howard.

876. *T. ashmeadii*, How. ♀. Grenada.

CHILONEURUS, Westwood.

877. *C. funiculus*, How. ♀. Grenada.
878. *C. nigrescens*, How. ♀. Grenada.

HOMALOPODA, Howard.

879. *H. cristata*, How. ♀. St. Vincent.

## Family LXIX. PTEROMALIDÆ.

Subfamily I. *MERISINÆ.*

ROPTROCERUS, Ratzeburg.

880. *R. auratus*, Ashm. ♀. St. Vincent.

Subfamily II. *PTEROMALINÆ.*

SPINTHERUS, Thomson.

881. *S.* (?) *dubius*, Ashm. ♀. St. Vincent; Grenada.

MERAPORUS, Walker.

882. *M. nigrocyaneus*, Ashm. ♂. St. Vincent; Grenada.

PTEROMALUS, Swederus.

883. *P. rugoso-punctatus*, Ashm. St. Vincent; Grenada.

CATOLACCUS, Thomson.

884. *C. carinatus*, How. Grenada.
885. *C. helice*, Walk. ♀. St. Vincent.
886. *C. pallipes*, Ashm. ♀. St. Vincent.
887. *C. vulgaris*, Ashm. ♀. St. Vincent.

CHRYSOGLYPHE, Ashmead.

888. *C. albipes*, Ashm. St. Vincent.
889. *C. apicalis*, Ashm. St. Vincent.



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(?) GLYPHE, Walker.

890. *G. punctata*, Ashm. (not a true *Glyphe*). ♀. St. Vincent.

Subfamily III. *SPHEGIGASTERINÆ.*

SYNTOMOPUS, Walker.

891. *S. incisoideus*, How. ♀. Grenada.

CYRTOGASTER, Walker.

892. *C. vulgaris*, Walk. St. Vincent; Europe.

POLYCYSTUS, Westwood.

893. *P. luteipes*, How. ♂. Grenada.
894. *P. nigriscapus*, How. ♀. Grenada.
895. *P. nigritus*, How. ♀. Grenada.

PACHYNEURON, Walker.

896. *P. laticeps*, Ashm. ♀. Grenada.

Subfamily IV. *SPALANGIINÆ.*

ASAPHES, Walker.

897. *A. vulgaris*, Walk. W. I.; Europe; N. Am. (generally).

SPALANGIA, Latreille.

898. *S. impuncta*, How. ♀. Grenada.
899. *S. nigra*, Latr. Grenada; St. Vincent.

Subfamily V. *DIPARINÆ.*

None.

Family LXX. ELASMIDÆ.

ELASMUS, Westwood.

900. *E. cellulatus*, How. ♂. Grenada.
901. *E. flaviventris*, How. Grenada.
902. *E. flavoscutellatus*, How. ♀. Grenada.
903. *E. flavus*, How. ♂. St. Vincent.
904. *E. helvus*, How. ♀. St. Vincent.
905. *E. levifrons*, How. Grenada; St. Vincent.
906. *E. maculatus*, How. ♀. St. Vincent.

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907. *E. punctulatus*, How. ♂. St. Vincent.
908. *E. punctatus*, How. ♀. St. Vincent.
909. *E. rugosus*, How. ♀. St. Vincent.
910. *E. smithii*, How. St. Vincent; Grenada.

## Family LXXI. EULOPHIDÆ.

### Subfamily I. *ENTEDONINÆ.*

#### ASTICHUS, Förster.

911. *A. ciliatus*, How. ♂. Grenada.

#### OMPHALE, Haliday.

912. *O. striata*, How. Grenada.
913. *O. varicolor*, Ashm. St. Vincent.

#### DEROSTENUS, Westwood.

914. *D. acutus*, Ashm. St. Vincent.
915. *D. quadrimaculatus*, Ashm. ♀. St. Vincent.
916. *D. rotundus*, Ashm. St. Vincent; Grenada.
917. *D. violaceus*, How. ♀. Grenada.

#### CHRYSOCHARIS, Förster.

918. *C. fulgens*, How. ♀. Grenada.
919. *C. lividiceps*, Ashm. ♀. St. Vincent; Grenada.
920. *C. lividus*, Ashm. St. Vincent.
921. *C. stigmatus*, Ashm. St. Vincent.

#### CLOSTEROCERUS, Westwood.

922. *C. albipes*, Ashm. ♂. St. Vincent.
923. *C. auriceps*, Ashm. ♂. St. Vincent.
924. *C. leucopus*, Ashm. St. Vincent.
925. *C. pulcher*, How. (*Entedon*). ♀. Grenada.

#### CHRYSOCHARODES, Ashmead.

926. *C. petiolata*, Ashm. St. Vincent.

#### HOLCOPELTE, Förster.

927. *H. cupreus*, Ashm. St. Vincent; Grenada.
928. *H. metallicus*, Ashm. St. Vincent; Grenada.
929. *H. nigroæneus*, Ashm. St. Vincent; Grenada.

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930. *H. nigrocyaneus*, Ashm. St. Vincent.
931. *H. petiolatus*, Ashm. St. Vincent.
932. *H. productus*, Ashm. St. Vincent.

PEDIOBIUS, Walker.

933. *P. grenadensis*, How. (*Sympiesis*). Grenada.
934. *P. politus*, How. (*Sympiesis*). ♀. Grenada.

Subfamily II. *APHELININÆ*.

COCCOPHAGUS, Westwood.

935. *C. lecanii*, Fitch. St. Vincent; N. Am., Canada, United States.

ASPIDIOTIPHAGUS, Howard.

936. *A. citrinus*, Craw. Grenada; N. Am.; Europe.

ENCARSIA, Förster.

937. *E. flaviclava*, How. ♀. St. Vincent.

ABLERUS, Howard.

938. *A. aureonotus*, How. ♀. Grenada.
939. *A. clisiocampæ*, Ashm. ♀. Grenada.

APHELINUS, Dalman.

940. *A. diaspidis*, How. ♀. Grenada.
941. *A. howardii*, Ashm. ♂. Grenada.

Subfamily III. *TETRASTICHINÆ*.

CERATONEURA, Ashmead.

942. *C. petiolata*, Ashm. St. Vincent; Grenada.
943. *C. pallida*, Ashm. ♂. St. Vincent.

GYROLASIA, Förster.

944. *G. bicolor*, Ashm. ♀. St. Vincent; Grenada.
945. *G. ciliata*, Ashm. ♀. St. Vincent; Grenada.
946. *G. femorata*, Ashm. ♀. St. Vincent; Grenada.
947. *G. flava*, How. ♀. Grenada.
948. *G. metallica*, Ashm. ♀. St. Vincent; Grenada.

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### SYNTOMOSPHYRUM, Förster.

949. *S. insularis*, Ashm. St. Vincent.

### TETRASTICHODES, Ashmead.

950. *T. compactus*, How. Grenada.
951. *T. coxalis*, How. ♀. Grenada.
952. *T. cupreus*, Ashm. St. Vincent; Grenada.
953. *T. femoratus*, Ashm. St. Vincent; Grenada.
954. *T. flavipes*, How. ♀. Grenada.
955. *T. nigroscapus*, How. ♀. Grenada.

### PENTASTICHUS, Ashmead.

956. *P. flavus*, How. ♀. Grenada.
957. *P. longior*, How. ♀. Grenada.
958. *P. xanthopus*, Ashm. St. Vincent.

### TETRASTICHUS, Haliday.

959. *T. acutipennis*, Ashm. ♀. St. Vincent; Grenada.
960. *T. ashmeadi*, How. ♀. Grenada.
961. *T. basilaris*, Ashm. ♀. St. Vincent; Grenada.
962. *T. circularis*, How. ♀. Grenada.
963. *T. coxalis*, How. ♀. Grenada.
964. *T. cupreus*, Ashm. ♀. St. Vincent.
965. *T. cuproideus*, How. ♀. Grenada.
966. *T. fasciatus*, Ashm. ♀. St. Vincent.
967. *T. flavus*, Ashm. ♀. Grenada.
968. *T. fuscipennis*, How. ♂. Grenada.
969. *T. longicornis*, Ashm. ♀. St. Vincent.
970. *T. micans*, How. ♀. Grenada.
971. *T. punctifrons*, Ashm. ♀. St. Vincent.
972. *T. similis*, How. ♀. Grenada.
973. *T. sulcatus*, How. ♀. Grenada.
974. *T. viridescens*, How. ♀. Grenada.
975. *T. vulgaris*, Ashm. ♀. St. Vincent; Grenada.

## Subfamily IV. *EULOPHINÆ.*

### EUPLECTRUS, Westwood.

976. *E. furnius*, Walker. St. Vincent; Grenada.

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PACHYSCAPHA, Howard.

977. *P. insularis*, How. ♂. Grenada.

ELACHISTUS, Spinola.

978. *E. aureus*, How. Grenada.
979. *E. caudatus*, How. ♀. Grenada.
980. *E. metallicus*, How. ♀. Grenada.
981. *E. scutellatus*, How. Grenada; St. Vincent.

STENOMESIUS, Westwood.

982. *S. grenadensis*, How. ♀. Grenada.
983. *S. histrionicus*, How. ♂. Grenada.
984. *S. platynotæ*, How. ♀. Grenada; N. Am., Florida.

ARDALUS, Howard.

985. *A. aciculatus*, How. ♀. Grenada.
986. *A. albipes*, Ashm. ♀. St. Vincent.
987. *A. maculipennis*, Ashm. ♀. St. Vincent.
988. *A. politus*, How. ♀. Grenada.

MIOTROPIS, Thomson.

989. *M. gibbosus*, How. ♀. Grenada.
990. *M. nigricans*, How. Grenada; St. Vincent.
991. *M. versicolor*, How. ♂. St. Vincent.

PARAOLINX, Ashmead.

992. *P. lineatifrons*, Ashm. St. Vincent.

HOPLOCREPIS, Ashmead.

993. *H. albiclavus*, Ashm. St. Vincent; N. Am., Florida.
994. *H. grenadensis*, How. ♀. Grenada.

NECREMNUS, Thomson.

995. *N.* (?) *purpureus*, How. ♀. Grenada.

EULOPHUS, Geoffroy.

996. *E. auripunctatus*, Ashm. ♀. St. Vincent; Grenada.

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## Family LXXII. TRICHOGRAMMIDÆ.

### PARACENTROBIA, Howard.

997. *P. punctata*, How. ♀. Grenada.

## Family LXXIII. MYMARIDÆ.

### Subfamily I. *GONATOCERINÆ.*

### LITUS, Haliday.

998. *L. maculipennis*, Ashm. ♂. St. Vincent.

### Subfamily II. *MYMARINÆ.*

### POLYNEMA, Haliday.

999. *P. albicoxa*, Ashm. ♀. St. Vincent.
1000. *P. grenadensis*, Ashm. ♀. Grenada.
1001. *P. magniceps*, Ashm. ♂. St. Vincent.

### Superfamily VIII. *ICHNEUMONOIDEA.*

## Family LXXIV. EVANIIDÆ.

### Subfamily I. *EVANIINÆ.*

### EVANIA, Fabricius.

1002. *E. appendigaster*, Linné. W. I.; Jamaica; Cuba; Porto Rico; Bahamas (Cosmopolite).
1003. *E. ruficaput*, Dewitz. Porto Rico.
1004. *E. servillei*, Guér. San Domingo.
1005. *E. semirubra*, Cress. Cuba.

### HYPTIA, Illiger.

1006. *H. petiolata*, Fabr. Porto Rico.
1007. *H. rufipictus*, Dewitz. Porto Rico.
1008. *H. stimulata*, Schlett. Cuba.
1009. *H. thoracicum*, Shuck. W. I.; Cuba; St. Thomas.

### GASTERUPTRION, Latreille.

1010. *G. rufipectum*, Westw. St. Vincent.
1011. *G. guildingii*, Westw. St. Vincent.

### Subfamily II. *AULACINÆ.*

## Family LXXV. AGRIOTYPIDÆ.

None.

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## Family LXXVI. ICHNEUMONIDÆ.

### Subfamily I. *ICHNEUMONINÆ.*

#### Tribe I. JOPPINI.

TROGUS, Gravenhorst.

1012. *T. albovarius*, Cress. ♀. Cuba.
1013. *T. fasciipennis*, Br. Cuba.
1014. *T. ornatipennis*, Cress. ♀. Cuba.
1015. *T. pusillus*, Cress. ♂. Cuba.
1016. *T. thoracicus*, Cress. ♂. Cuba.
1017. *T. tricinctus*, Cress. ♀. Cuba.

#### Tribe II. ICHNEUMONINI.

ICHNEUMON, Linné.

1018. *I. albipectus*, Br. ♀. Cuba.
1019. *I. breviventris*, Cress. ♂. Cuba.
1020. *I. burrus*, Cress. ♀. Cuba.
1021. *I. cubensis*, Cress. ♀. Cuba.
1022. *I. flavovarius*, Cress. ♂. Cuba.
1023. *I. meridionalis*, Cress. ♀. Cuba.
1024. *I. serricornis*, Cress. ♂. Cuba.

#### Tribe III. LISTRODROMINI.

None.

#### Tribe IV. HERESIARCHINI.

None.

#### Tribe V. ALOMYINI.

None.

#### Tribe VI. PHÆOGENINI.

None.

### Subfamily II. *CRYPTINÆ.*

#### Tribe I. STILPNINI.

None.

#### Tribe II. PHYGADENONINI.

STIBOSCOPUS, Förster.

1025. *S. grenadensis*, Ashm. ♂. Grenada.
1026. *S. thoracicus*, Ashm. Grenada.

APSILOPS, Förster.

1027. *A radiata*, Ashm. ♀. (*Diaglypta.*) St. Vincent.

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### Tribe III. HEMITELINI.

#### HEMITELES, Gravenhorst.

1028. *H. amœnus*, Cress. ♀. Cuba.
1029. *H. bicinctus*, Cress. ♀. Cuba.
1030. *H. fuscipennis*, Br. Haiti.
1031. *H. incerta*, Cress. ♀. Cuba; Jamaica; Porto Rico.
1032. *H. maculithorax*, Ashm. St. Vincent.
1033. *H. subflavescens*, Cress. ♂. Cuba.
1034. *H. thoracicus*, Cress. ♀. Cuba.

### Tribe IV. PEZOMACHINI.

None.

### Tribe V. CRYPTINI.

#### CRYPTUS, Gravenhorst.

1035. *C. cubensis*, Cr. ♀. Cuba.
1036. *C. fasciipennis*, Br. Cuba; N.Am., Florida (Ashm.).

### Tribe VI. MESOSTENINI.

#### MESOSTENUS, Gravenhorst.

1037. *M. flavescens*, Cress. ♀. Cuba.
1038. *M. grenadensis*, Ashm. ♀. Grenada.
1039. *M. cressonii*, Ashm., n. n. (= *insularis*, Ashm.) (preoc.). St. Vincent.
1040. *M. insularis*, Cress. Cuba.
1041. *M. pusillus*, Cress. ♀. Cuba.
1042. *M. robustus*, Cress. ♀. Cuba.
1043. *M. strenuus*, Cress. ♂. Cuba.
1044. *M. tarsatus*, Cress. ♀. Cuba.
1045. *M. zonatus*, Cress. ♀. Cuba.

#### POLYCYRTUS, Spinola.

1046. *P. lituratus*, Br. (*Mesostenus*). Cuba.
1047. *P. tricolor*, Br. (*Mesostenus*). ♀. Cuba.
1048. *M. trilineatus*, Br. (*Mesostenus*). Haiti.
1049. *M. subtenuis*, Cr. (*Mesostenus*). ♂. Cuba.
1050. *M. semialbus*, Cr. (*Mesostenus*). ♀. Cuba.

### Tribe VII. HEMIGASTERINI.

None.

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Subfamily III. *PIMPLINÆ.*

Tribe I. ACŒNITINI.

None.

Tribe II. LEBENINI.

LEBENA, Cresson.

1051. *L. trilineata*, Ashm. ♂. Grenada.

Tribe III. LISSONOTINI.

ASPHRAGIS, Förster.

1052. *A. bilineata*, Ashm. ♀. Grenada.

LAMPRONOTA, Curtis.

1053. *L. albomaculata*, Ashm. ♂. St. Vincent.
1054. *L. rufithorax*, Cress. ♂. Cuba.

Tribe IV. PIMPLINI.

EPIRHYSSA, Cresson.

1055. *E. speciosa*, Cress. Cuba.

EPHIALTES, Gravenhorst.

1056. *E. cressoni*, Dewitz. ♀. Porto Rico.
1057. *E. rufescens*, Cress. ♀. Cuba.

EPIMECUS, Brullé.

1058. *E. atriceps*, Cress. ♀. Cuba.
1059. *E. fasciipennis*, Cress. ♂. Cuba.
1060. *E. ferruginosa*, Cress. ♀. Cuba.
1061. *E. fuscipennis*, Cress. ♂. Cuba.

PIMPLA, Gravenhorst.

1062. *P. bicincta*, Cress. ♀. Cuba.
1063. *P. consimilis*, Cress. ♀. Cuba.
1064. *P. cubensis*, Cress. ♀. Cuba.
1065. *P. fuscicornis*, Br. ♂. Guadeloupe.
1066. *P. marginella*, Brullé. Porto Rico; Jamaica.
1067. *P. nubecularia*, Dewitz. ♂. Porto Rico.
1068. *P. obscurata*, Cress. ♀. Cuba.

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1069. *P. rufoniger*, Cress. ♀. Cuba.
1070. *P. terminalis*, Cress. ♀. Cuba.
1071. *P. tricincta*, Cress. ♀. Cuba.

CLISTOPYGA, Gravenhorst.

1072. *C. lateralis*, Cress. Cuba.

Tribe V. XORIDINI.

ISCHNOCERUS, Gravenhorst.

1073. *I. abdominalis*, Cress. ♀. Cuba.

Subfamily IV. *TRYPHONINÆ.*

Tribe I. MESOLEPTINI.

None.

Tribe II. CTENISCINI.

None.

Tribe III. CTENOPELMINI.

None.

Tribe IV. TRYPHONINI.

TRYPHON, Gravenhorst.

1074. *T. cerberus*, Dewitz. ♂. Porto Rico.
1075. *T. cinctus*, Cress. ♂. Cuba.
1076. *T.* (?) *exiguus*, Cress. ♀. Cuba.
1077. *T.* (?) *claviventris*, Cress. ♂. Cuba.

Tribe V. BASSINI.

BASSUS, Gravenhorst.

1078. *B. lætatorius*, Fabr. W. I. (Cosmopolite).

Tribe VI. ORTHOCENTRINI.

NEURATELUS, Ratzeburg.

1079. *N. variabilis*, Ashm. (*Orthocentrus.*) St. Vincent.
1080. *N. meridionalis*, Ashm. ♀. Grenada.

ORTHOCENTRUS, Gravenhorst.

1081. *O. insularis*, Ashm. ♂. St. Vincent.

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Tribe VII. EXOCHINI.

EXOCHUS, Gravenhorst.

1082. *E. tegularis*, Ashm. St. Vincent.
1083. *E. validus*, Cress. ♂. Cuba.

Tribe VIII. TYLOCOMNINI.

None.

Tribe IX. SPHINCTINI.

None.

Tribe X. METOPIINI.

None.

Subfamily V. *OPHIONINÆ*.

Tribe I. HELLWIGIINÆ.

None.

Tribe II. OPHIONINI.

THYREODON, Brullé.

1084. *T. affinis*, Cress. ♂. Cuba.
1085. *T. elegans*, Cress. ♀. Cuba.
1086. *T. fulvescens*, Cress. ♂. Cuba.
1087. *T. grenadensis*, Ashm. ♀. Grenada.
1088. *T. grandis*, Cress. ♀. Cuba.

ENICOSPILUS, Curtis.

1089. *E. concolor*, Cress. (*Ophion*). Cuba; Jamaica; Grenada.
1090. *E. cubensis*, Norton (*Ophion*) (= *Mauritii*, Sauss.). Cuba; St. Vincent; Grenada; Mauritius; Jamaica.
1091. *E. flavus*, Fabr. (*Ophion*). Cuba; Grenada; St. Vincent; Jamaica.
1092. *E. thoracicus*, Cress. (*Ophion*). ♀. Cuba.

Tribe III. NOTOTRACHINI.

NOTOTRACHYS, Marshall.

1093. *N. basalis*, Cress. ♂. Cuba.
1094. *N. cincticornis*, Cress. ♀. Cuba.
1095. *N. fuscatus*, Cress. Cuba.
1096. *N. minimus*, Ashm. St. Vincent.
1097. *N. niger*, Ashm. St. Vincent.

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Tribe IV. ANOMALINI.

EIPHOSOMA, Cresson.

1098. *E. annulatum*, Cress. Cuba; Grenada; St. Vincent; Porto Rico; Jamaica.
1099. *E. atrovittatum*, Cress. ♀. Cuba.
1100. *E. nigrovittatum*, Cress. ♀. Cuba; Jamaica; Porto Rico.
1101. *E. vitticolle*, Cress. ♀. Cuba.

AGRYPON, Förster.

1102. *A. flavopictus*, Ashm. ♂. Grenada.

Tribe V. CAMPOPLEGINI.

CHAROPS, Holmgren.

1103. *C. bimaculata*, Ashm. ♀. Grenada.
1104. *C. unicincta*, Ashm. ♂. Grenada.

CAMPOPLEX, Gravenhorst.

1105. *C. atriceps*, Cress. ♀. Cuba.
1106. *C.* (?) *bellus*, Cress. ♀. Cuba.
1107. *C. insularis*, Cress. ♀. Cuba.
1108. *C. meridionalis*, Cress. St. Vincent.
1109. *C.* (?) *pedalis*, Cress. ♂. Cuba.
1110. *C. tibiator*, Cress. Cuba.

ANGITIA, Holmgren.

1111. *A. insularis*, Ashm. ♀. St. Vincent.

Tribe VI. PANISCINI.

PANISCUS, Gravenhorst.

1112. *P. rufus*, Br. Cuba; Grenada.
1113. *P. subfuscus*, Cress. ♀. Cuba.

Tribe VII. BAUCHINI.

None.

Tribe VIII. MESOCHORINI.

MESOCHORUS, Brullé.

1114. *M. annulitarsis*, Ashm. ♂. St. Vincent.
1115. *M. grenadensis*, Ashm. ♂. Grenada.

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Tribe IX. PORIZONINI.

PORIZON, Gravenhorst.

1116. *P. fulvescens*, Cress. ♀. Cuba.

THERSILOCHUS, Holmgren.

1117. *T. apicalis*, Cress. (*Porizon*). Cuba; St. Vincent.
1118. *T. dorsalis*, Ashm. ♀. St. Vincent.

ISURGUS, Förster.

1119. *I. nigriceps*, Ashm. ♀. St. Vincent.

Tribe X. PRISTOMERINI.

None.

Tribe XI. CREMASTINI.

CREMASTUS, Gravenhorst.

1120. *C. luctuosus*, Cress. ♂. Cuba.

Tribe XII. PLECTISCINI.

None.

Family LXXVII. *ALYSIIDÆ*.

Subfamily I. *LYSIOGNATHINÆ*.

None.

Subfamily II. *ALYSIINÆ*.

ALYSIA, Latreille.

1121. *A. analis*, Cress. Cuba.
1122. *A. astarte*, Hal. ♂. St. Vincent.
1123. *A. nigriceps*, Cress. ♂. Cuba.
1124. *A. ruficoxalis*, Cress. ♂. Cuba.

PHÆNOCARPA, Förster.

1125. *P. pleuralis*, Ashm. ♀. St. Vincent.

APHÆRETA, Förster.

1126. *A. apicalis*, Ashm. ♀. Grenada.

SYNCRASIS, Förster.

1127. *S. flavifrons*, Ashm. ♂. Grenada.

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Subfamily III. *DACNUSINÆ.*

None.

## Family LXXVIII. *BRACONIDÆ.*

Subfamily I. *APHIDIINÆ.*

APHIDIUS, Nees.

1128. *A. fulvus*, Cress. Cuba.
1129. *A. fuscoventris*, Cress. Cuba.
1130. *A. longicornis*, Cress. Cuba.
1131. *A. pallidipes*, Cress. Cuba.

LYSIPHLEBUS, Förster.

1132. *L. meridionalis*, Ashm. St. Vincent.

TRIOXYS, Haliday.

1133. *T. fuscatus*, Cress. Cuba.

Subfamily II. *PACHYLOMMINÆ.*

None.

Subfamily III. *EUPHORINÆ.*

None.

Subfamily IV. *METEORINÆ.*

ARIDELUS, Marshall.

1134. *A. bucephalus*, Marsh. ♀. Trinidad.

Subfamily V. *MACROCENTRINÆ.*

MACROCENTRUS, Curtis.

1135. *M. delicatus*, Cress. St. Vincent; Grenada.

Subfamily VI. *HELCONINÆ.*

CONOCŒLIUS, Haliday.

1136. *C. nigriventris*, Cress. ♀. Cuba.

Subfamily VII. *BLACINÆ.*

Tribe I. BLACINI.

BLACUS, Nees.

1137. *B. rubriceps*, Ashm. ♂. St. Vincent; Grenada.

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GANYCHORUS, Haliday.

1138. *G. collaris*, Ashm. ♀. St. Vincent.

Tribe II. ORGILINI.

HYMENOCHAONIA, Dalla Torre.

1139. *H. pallida*, Cress. (*Chaonia*). Cuba.
1140. *H. xanthostigma*, Cress. (*Chaonia*). Cuba.

ORGILUS, Haliday.

1141. *O. pallidus*, Ashm. ♀. St. Vincent.

Tribe III. CALYPTINI.

CALYPTUS, Haliday.

1142. *C. thoracicus*, Ashm. ♀. St. Vincent.

LIOPHRON, Nees.

1143. *L. minutus*, Ashm. St. Vincent.

Subfamily VIII. *SIGALPHINÆ*.

None.

Subfamily IX. *CHELONINÆ*.

CHELONUS, Jurine.

1144. *C. antillarum*, Marsh. W. I.
1145. *C. insularis*, Cress. ♀. Cuba; Porto Rico.
1146. *C. meridionalis*, Ashm. St. Vincent.

PHANEROTOMA, Wesmael.

1147. *P. fuscovaria*, Ashm. St. Vincent.
1148. *P. humeralis*, Ashm. ♂. St. Vincent.
1149. *P. insularis*, Ashm. ♂. St. Vincent.
1150. *P. meridionalis*, Ashm. ♂. St. Vincent.

Subfamily X. *AGATHIDINÆ*.

Tribe I. AGATHIDINI.

CREMNOPS, Förster.

1151. *C. pectoralis*, Ashm. (*Agathis*). St. Vincent; Grenada.

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AGATHIS, Latreille.

1152. *A. cressonii*, Cam. Antigua; Cuba; N. Am., Mexico.
1153. *A. cubensis*, Cress. Cuba.
1154. *A. ferrugator*, Cress. Cuba.
1155. *A. rubricincta*, Ashm. St. Vincent; Jamaica.
1156. *A. seminigra*, Cress. ♀. Cuba.

Tribe II. MICRODINI.

MICRODUS, Nees.

1157. *M. fasciipennis*, Cress. ♀. Cuba.
1158. *M. insularis*, Ashm. Grenada; St. Vincent.
1159. *M. smithii*, Ashm. St. Vincent.
1160. *M. stigmaterus*, Cress. Cuba; Grenada; St. Vincent.
1161. *M. unicinctus*, Ashm. ♀. St. Vincent.
1162. *M. variipes*. Cress. Cuba; Grenada; St. Vincent.

Subfamily XI. *CARDIOCHILINÆ.*

CARDIOCHILES, Nees ( = *Toxoneuron*, Say.).

1163. *C. atricornis*, Ashm. Grenada; St. Vincent.

Subfamily XII. *MICROGASTERINÆ.*

CŒLOTHORAX, Ashmead.

1164. *C. læviceps*, Ashm. ♀. St. Vincent.

APANTELES, Förster.

1165. *A. americanus*, Lepel. (*Microgaster*). Martinique; Cuba.
1166. *A. flaviventris*, Cress. (*Microgaster*). Cuba.
1167. *A. grenadensis*, Ashm. Grenada.
1168. *A. herbertii*, Ashm. ♀. Grenada; St. Vincent.
1169. *A. iridescens*, Cress. (*Microgaster*). ♀. Cuba.
1170. *A. marginiventris*, Cress. (*Microgaster*). ♀. Cuba.
1171. *A. sancti-vincenti*, Ashm. ♂. St. Vincent.
1172. *A. sordidus*, Ashm. ♂. St. Vincent.
1173. *A. xanthaspis*, Ashm. St. Vincent.



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PROTAPANTELES, Ashmead.

1174. *P. parallelus*, Ashm. St. Vincent.

PSEUDAPANTELES, Ashmead.

1175. *P. annulicornis*, Ashm. St. Vincent.
1176. *P. brunneus*, Ashm. ♂. St. Vincent.
1177. *P. sancti-vincenti*, Ashm. St. Vincent.

UROGASTER, Ashmead.

1178. *U. aciculatus*, Ashm. ♂. Grenada.
1179. *U. balthazari*, Ashm. ♀. Grenada.
1180. *U. disputabilis*, Ashm. ♀. Grenada; St. Vincent.
1181. *U. grenadensis*, Ashm. ♀. Grenada.
1182. *U. hyalinus*, Cress. (*Microgaster*). Cuba.
1183. *U. imitator*, Ashm. ♀. St. Vincent.
1184. *U. leucopus*, Ashm. ♀. St. Vincent.
1185. *U. leucostigmus*, Ashm. Grenada; St. Vincent.
1186. *U. meridionalis*, Ashm. Grenada; St. Vincent.
1187. *U. nigriceps*, Ashm. ♀. St. Vincent.
1188. *U. pinos*, Cress. (*Microgaster*). Cuba.
1189. *U. rhomboidalis*, Ashm. ♀. St. Vincent.
1190. *U. solitarius*, Ashm. ♀. Grenada.
1191. *U. vulgaris*, Ashm. ♂. Grenada.
1192. *U. xanthopus*, Ashm. ♀. St. Vincent.

PROTOMICROPLITIS, Ashmead.

1193. *P. mediatus*, Cress. (*Microgaster*). ♂. Cuba.

MICROPLITIS, Förster.

1194. *M. carinata*, Ashm. St. Vincent.

Subfamily XIII. *ICHNEUTINÆ.*

None.

Subfamily XIV. *OPIINÆ.*

GRAMPTODON, Haliday.

1195. *G. atricaudis*, Ashm. St. Vincent.

DIACHASMUS, Förster.

1196. *D. pilosipes*, Ashm. St. Vincent.

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### OPIUS, Wesmael.

1197. *O. ashmeadii*, Dalla Torre (= *annulicornis*, Ashm.). St. Vincent.
1198. *O. atriceps*, Ashm. ♂. St. Vincent.
1199. *O. grenadensis*, Ashm. ♀. Grenada.
1200. *O. insularis*, Ashm. St. Vincent.
1201. *O. melanocephalus*, Ashm. St. Vincent.
1202. *O. rejectus*, Ashm. St. Vincent.
1203. *O. salvinii*, Ashm. St. Vincent.
1204. *O. tantillus*, Ashm. Grenada.
1205. *O. unifasciatus*, Ashm. ♂. St. Vincent.

## Subfamily XV. *BRACONINÆ.*

### Tribe I. APHRASTOBRACONINI.

None.

### Tribe II. BRACONINI.

### IPHIAULAX, Förster.

1206. *I. crenulatus*, Cress. (*Bracon*). ♀. Cuba.
1207. *I. flavomaculatus*, Ashm. ♀. St. Vincent; Grenada.
1208. *I. grenadensis*, Ashm. Grenada.
1209. *I. leviventris*, Cress. (*Bracon*). ♀. Cuba.
1210. *I. plicatus*, Cress. (*Bracon*). ♀. Cuba; Bahamas.
1211. *I. voraginis*, Cress. (*Bracon*). ♀. Cuba.
1212. *I. xanthospilus*, Ashm. St. Vincent; Grenada.

### GLYPTOMORPHA, Holmgren.

1213. *G. thoracica*, Ashm. Grenada.
1214. *G. pallipes*, Cress. (*Bracon*). ♂. Cuba.

### MELANOBRACON, Ashmead.

1215. *M. picipes*, Cress. (*Bracon*). ♀. Cuba.

### COMPSOBRACON, Ashmead.

1216. *C. regnatrix*, Cress. (*Bracon*). ♀. Cuba.

### MYOSOMA, Brullé.

1217. *M. pilosipes*, Ashm. ♂. St. Vincent.

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### MICROBRACON, Ashmead.

1218. *M. pilosithorax*, Ashm. ♂. St. Vincent.

### BRACON, Fabricius.

1219. *B. aciculatus*, Cress. Cuba.
1220. *B. albifrons*, Cress. ♂. Cuba.
1221. *B. centralis*, Cress. ♀. Cuba.
1222. *B. cincticornis*, Cress. ♀. Cuba.
1223. *B. cressonii*, Dalla Torre (= *distinctus*, Cress.). ♀. Cuba.
1224. *B. dejectus*, Cress. ♂. Cuba.
1225. *B. erythræus*, Br. ♀. Cuba.
1226. *B. exiguus*, Cress. ♀. Cuba.
1227. *B. femoratus*, Ashm. St. Vincent; Grenada.
1228. *B. flavomaculatus*, Ashm. St. Vincent; Grenada.
1229. *B. fuscovarius*, Cress. ♀. Cuba.
1230. *B. intimus*, Cress. Cuba.
1231. *B. lativentris*, Cress. ♀. Cuba.
1232. *B. niger*, Ashm. St. Vincent.
1233. *B. pallens*, Cress. ♀. Cuba.
1234. *B. perparvus*, Cress. ♂. Cuba.
1235. *B. planiventris*, Dalla Torre (= *B. platygaster*, Ashm.). St. Vincent.
1236. *B. plicatus*, Cress. ♀. Cuba.
1237. *B. rufithorax*, Cress. ♀. Cuba.
1238. *B. sancti-vincenti*, Ashm. St. Vincent; Grenada.
1239. *B. seminiger*, Ashm. ♂. St. Vincent.
1240. *B. striatulus*, Cress. ♀. Cuba.
1241. *B. ventralis*, Cress. ♀. Cuba.
1242. *B. vulgaris*, Ashm. St. Vincent.
1243. *B. xanthospilus*, Ashm. St. Vincent.

### TROPIDOBRACON, Ashmead.

1244. *T. fuscitarsis*, Ashm. ♀. Grenada.

## Subfamily XVI. *RHOGADINÆ*.

### Tribe I. EXOTHECINI.

None.

### Tribe II. RHYSSALINI.

### COLASTES, Haliday.

1245. *C. grenadensis*, Ashm. Grenada.

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CLINOCENTRUS, Haliday.

1246. *C. flaviventris*, Ashm. ♂. St. Vincent.

RHYSSALUS, Haliday.

1247. *R. brunneiventris*, Ashm. ♀. St. Vincent.
1248. *R. cænophanoides*, Ashm. ♂. St. Vincent.
1249. *R. melleus*, Ashm. St. Vincent.

Tribe III. RHOGADINI.

RHOGAS, Nees.

1250. *R. bifasciatus*, Ashm. Grenada.
1251. *R. flavidus*, Cress. Cuba.
1252. *R. pectoralis*, Ashm. St. Vincent.

Tribe IV. DORYCTINI.

ODONTOBRACON, Cameron.

1253. *O. armatus*, Cress. (*Bracon*). ♀. Cuba.
1254. *O. limatus*, Cress. (*Bracon*). ♀. Cuba.

HEDYSOMUS, Förster.

1255. *H. limatus*, Cress. (*Bracon*). ♀. Cuba.
1256. *H. distinctus*, Cress. (*Bracon*). ♀. Cuba.

STENOPHASMUS, Smith.

1257. *S. cubensis*, Cress. ♀. Cuba.
1258. *S. gundlachii*, Cress. ♀. Cuba.
1259. *S. megischoides*, Cress. ♂. Cuba.
1260. *S. pusillus*, Cress. ♂. Cuba.
1261. *S. terminalis*, Ashm. St. Vincent; Grenada.

Tribe V. HECABOLINI.

None.

Subfamily XVII. *SPATHIINÆ*.

Tribe I. PAMBOLINI.

PAMBOLUS, Haliday.

1262. *P. annulicornis*, Ashm. St. Vincent.

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ECPHYLUS, Förster.

1263. *E. terminalis*, Ashm. (*Lysitermus*). St. Vincent; Grenada.

TELEBOLUS, Marshall.

1264. *T. fasciipennis*, Ashm. (*Lysitermus*). ♀. St. Vincent; Grenada.

Tribe II. HORMIINI.

HORMIUS, Nees.

1265. *H. rugosicollis*, Ashm. ♀. Grenada.

HETEROSPILUS, Haliday.

(= *Synodus*, Ratzeberg.)

(= *Cænophanes*, Förster.)

(= *Eurybolus*, Thomson.)

1266. *H. carbonarius*, Ashm. ♀. St. Vincent.
1267. *H. discolor*, Cress. (*Bracon*). ♀. Cuba.
1268. *H. fasciatus*, Ashm. St. Vincent.
1269. *H. ferrugineus*, Ashm. ♀. St. Vincent.
1270. *H. flaviceps*, Hal. St. Vincent.
1271. *H. humeralis*, Ashm. St. Vincent.
1272. *H. longicaudus*, Ashm. ♀. St. Vincent.
1273. *H. nigrescens*, Ashm. ♀. St. Vincent.
1274. *H. pallidipes*, Ashm. St. Vincent.
1275. *H. quæstor*, Hal. St. Vincent.
1276. *H. terminalis*, Ashm. Grenada.
1277. *H. variegatus*, Ashm. St. Vincent.

TRISSARTHRUM, Ashm.

1278. *T.* (*Dimeris* ?) *maculipenne*, Ashm. St. Vincent.

Tribe III. SPATHIINI.

SPATHIUS, Nees.

1279. *S. elcutheræ*, Ashm. ♀. Bahamas.
1280. *S. flavotestaceus*, Ashm. ♂. Grenada.

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### Family LXXIX. STEPHANIDÆ.

STEPHANUS, Jurine.

1281. *S. brunneus*, Cress. (*Megischus*). ♀. Cuba.

## Suborder II. PHYTOPHAGA, Latreille.

Superfamily IX. *SIRICOIDEA.*

### Family LXXX. ORYSSIDÆ.

None.

### Family LXXXI. SIRICIDÆ.

Subfamily I. *SIRICINÆ.*

None.

Subfamily II. *TREMECINÆ.*

TEREDON, Norton.

1282. *T. cubensis*, Cress. ♀. Cuba.
1283. *T. latitarsis*, Cress. ♂. Cuba.

### Family LXXXII. XIPHYDRIIDÆ.

Subfamily I. *DERECYRTINÆ.*

None.

Subfamily II. *XIPHYDRIINÆ.*

None.

### Family LXXXIII. CEPHIDÆ.

None.

Superfamily X. *TENTHREDINOIDEA.*

### Family LXXXIV. XYELIDÆ.

Subfamily I. *MACROXYELINÆ.*

None.

Subfamily II. *XYELINÆ.*

None.

### Family LXXXV. LYDIDÆ.

Subfamily I. *MEGALODONTINÆ.*

None.

Subfamily II. *LYDINÆ.*

None.

### Family LXXXVI. HYLOTOMIDÆ.

Subfamily I. *SCHIZOCERINÆ.*

SCHIZOCERA, Lepeletier.

1284. *S. krugii*, Cress. Porto Rico.
1285. *S. zaddachi*, Dewitz. Porto Rico.

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HEMIDIANEURA, Kirby.

1286. *H. thoracia*, Ashm. ♀. Grenada.

Subfamily II. *HYLOTOMINÆ.*

None.

Family LXXXVII. LOPHYRIDÆ.

LOPHYRUS, Latreille.

1287. *L. insularis*, Cress. Cuba.

Family LXXXVIII. PERREYIIDÆ.

None.

Family LXXXIX. PTERYGOPHORIDÆ.

Subfamily I. *LOBOCERATINÆ.*

ACORDULECERA, Say.

1288. *A. insularis*, Ashm. ♀. St. Vincent.

Subfamily II. *PTERYGOPHORINÆ.*

None.

Subfamily III. *PERGINÆ.*

None.

Family XC. SELANDRIIDÆ.

Subfamily I. *BLENNOCAMPINÆ.*

None.

Subfamily II. *BLASTICOTOMINÆ.*

None.

Subfamily III. *SELANDRIINÆ.*

None.

Subfamily IV. *HOPLOCAMPINÆ.*

None.

Family XCI. NEMATIDÆ.

Subfamily I. *CLADINÆ.*

None.

Subfamily II. *NEMATINÆ.*

None.

Family XCII. DINEURIDÆ.

Subfamily I. *HEMICHROINÆ.*

None.

Subfamily II. *DINEURINÆ.*

None.

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## Family XCIII. TENTHREDINIDÆ.

### Subfamily I. *ATHLOPHORINÆ.*

None.

### Subfamily II. *DOLERINÆ.*

None.

### Subfamily III. *STRONGYLOGASTERINÆ.*

None.

### Subfamily IV. *TENTHREDININÆ.*

None.

## Family XCIV. CIMBICIDÆ.

### Subfamily I. *CIMBICINÆ.*

#### CIMBEX, Olivier.

1289. *C. klugii*, Leach. ♀. San Domingo.
1290. *C. macleavi*, Leach. San Domingo.

### Subfamily II. *ABIINÆ.*

None.

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# VII. *New Palæarctic* Pyralidæ. By Sir George F. Hampson, Bart., F.Z.S., etc.

[Read May 2nd, 1900.]

Plate III.

In view of the approaching publication of a new edition of the Catalogue of Palæarctic Lepidoptera which is now in the press, Dr. O. Staudinger asked me to work out the undetermined *Pyralidæ* in his collection, among which I find the following new species. The species marked with an (*) are not in the British Museum Collection, but when not figured on the plate are represented by a coloured sketch, those without mark have the type in Coll. Staudinger and a co-type in Brit. Mus., while those marked with a (†) have the type in Brit. Mus. The numbers before the species refer to my papers on the classification of the *Pyralidæ*, and indicate where the species should be placed in their several genera.

## CRAMBINÆ.

### (4a.) *Crambus serraticornis*, n. sp.

♂ Antennæ strongly serrate.

Pale grey slightly tinged with brown. Forewing with some black scales near base of inner margin; a sub-basal wedge-shaped patch of black scales on vein 1, traces of a medial dentate whitish band across end of cell, then bent inwards and angled in submedian fold, defined on each side by some black and brown scales; a whitish minutely dentate postmedial band strongly excurved below costa, then oblique and angled outwards in submedian fold, defined on inner side by a dark line and on outer by some brown suffusion; a terminal series of black points; cilia chequered brown and white. Hindwing with obscure fuscous terminal band; cilia white with a brownish line through them.

Expanse 22 millim.

Type in Coll. Staudinger.

*Hab.* Syria, Jordan R.

### (49a.) *Crambus dalmatinellus*, n. sp. (Stgr. MS.)

♂ Head and thorax ochreous irrorated with large brown scales; forelegs tinged with fuscous; abdomen ochreous. Forewing ochreous yellow irrorated with large brown scales these being very few on costal



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area; the interspaces of inner half with obscure whitish streaks; a dark medial point on costa; an oblique line from upper angle of cell to middle of inner margin expanding into a more prominent spot below end of cell; a postmedial point on costa and traces of a line from vein 6, incurved below vein 4, and with an oblique series of short streaks in the interspaces; a terminal series of black points; cilia metallic cupreous. Hindwing pale brownish fuscous, the termen pale yellow; the cilia whitish. Underside of both wings pale fuscous with the margins yellow.

Expanse 24 millim.

Type in Coll. Staudinger.

*Hab.* DALMATIA, Lissa.

Differs from *C. inquinatellus* in the forewing being irrorated with large scales, the postmedial line almost obsolete, less excurved, and with series of short streaks beyond it.

(53.) *Crambus osseellus*, n. sp. (Stgr. MS.)

♂ Bright ochreous yellow. Forewing with a few brown scales above vein 1 before middle; a short brown streak below base of vein 2 and another just beyond discocellulars; an obscure postmedial series of short streaks in the interspaces, angled in discal fold, then oblique; a terminal series of minute points, obsolete towards apex. Abdomen and hindwing yellowish-white.

♀ Forewing with the markings obsolete except the terminal series of points.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* SPAIN, Granada.

(56a.) *Crambus aridalis*, n. sp.

♂ Head and thorax whitish mixed with brown scales; abdomen brownish-white. Forewing pale grey-brown, the veins slightly streaked with white; an obscure streak of black scales below basal half of cell, and a diffused sub-basal patch on vein 1; obscure yellowish medial and postmedial lines angled at upper end of cell, then oblique and with patches of black scales on them between veins 7 and 1, the white streaks on the veins ending in points just beyond the postmedial line; a terminal series of black points; cilia brown intersected with white and with white line through them. Hindwing white tinged with pale brown; cilia white, brown at base.

Expanse 20 millim.

Type in Coll. Staudinger.

*Hab.* TRANSCAUCASIA, Mugau Steppe.

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(110a.) * *Crambus furciferalis*, n. sp. (Plate III, fig. 17.)

♀ Head and thorax white, sides of palpi, frons and patagia bright chestnut-yellow; abdomen white. Forewing orange-yellow tinged with chestnut, especially on costal half, to the postmedial line; a wedge-shaped silvery-white patch in cell extending to middle and with its extremity strongly forked, and with some black scales on its upper and outer edges; a diamond-shaped patch beyond the cell with diffused black scales above it; the postmedial line whitish oblique from costa to vein 6 where it is obtusely angled; a terminal series of black points; cilia brown with a dark line through them. Hindwing white tinged with fuscous, the cilia almost pure white.

Expanse 24 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Sutschau; W. CHINA, Omeishan.

Differs from *mytilellus*, Hb., in the forewing having the white patch in cell produced at its lower extremity so as to form a fork, and the patch beyond the cell broader and diamond-shaped.

(192a.) *Crambus fulvifusalis*, n. sp.

♂ White; palpi at sides, head and thorax slightly tinged with brown; fore femora above dark brown. Forewing slightly suffused and rather thickly irrorated with brown on costal half; a sub-basal yellow line from below costa to inner margin; an antemedial line angled below costa then rather oblique and with a spot beyond it on median nervure; an obscure spot on costa above end of cell and one at lower angle; postmedial spots on inner margin and above vein 2; the terminal part of costa white with two very oblique yellow lines; the termen and cilia with yellow-brown spots separated by short white streaks. Hindwing white, the apex tinged with brown.

♀ Forewing much more strongly suffused with brown extending almost to vein 1.

Expanse ♂ 20, ♀ 22 millim.

*Hab.* AMURLAND, Sutschau.

(204a.) * *Crambus cuencalis*, n. sp. (Plate III, fig. 9.)

♂ Head, thorax and abdomen white; palpi at sides and tarsi pale brown. Forewing white tinged with pale yellow-brown; a dark streak below costa to middle, two in cell and two in submedian interspace; a white fascia on median nervure expanding between the median nervules which are defined by dark streaks; two oblique brown streaks from costa beyond middle, the 1st becoming yellow

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then angled at vein 7 and as the postmedial line running obliquely to submedian fold where it terminates; two oblique lines with white between them across apical area, the waved yellowish subterminal line arising from their lower extremity; a fine dark terminal line from apex to vein 4 followed by three points; cilia white with a dark brown line through them, the tips pale brown. Hindwing white, the apical area tinged with pale brown; a fine brown terminal line, and line through the cilia.

Forewing with vein 11 anastomosing with 12; hindwing with veins 4·5 stalked.

Expanse 30 millim.

Type in Coll. Staudinger.

*Hab.* SPAIN, Cuenca.

(206a.) *Crambus atrisquamalis*, n. sp.

♀ Pale ochreous; head and thorax irrorated with a few black scales. Forewing irrorated with large black scales especially on inner area, forming ill-defined streaks in the interspaces; terminal black points in the interspaces between vein 4 and submedian fold. Hindwing yellowish-white, the apical area tinged with fuscous extending on termen to vein 2.

Forewing with vein 11 anastomosing with 12; hindwing with veins 4·5 from cell.

Expanse 30–36 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Sutschau, Chabarofka.

(15a.) *Diptychophora sinualis*, n. sp.

♂ Whitish; palpi brown at tips; thorax slightly tinged with brown; abdomen banded with dark brown. Forewing with dark brown patch at base of costa; a curved antemedial line slightly bent outwards to inner margin and with some brown suffusion beyond it in submedian fold; a discoidal spot on some brownish suffusion and with a brownish patch on costa above it; the postmedial line oblique from costa to vein 5, then curved, below vein 3 inwardly oblique and sinuous, with patches of orange suffusion beyond it at costa, below apex, on each side of the white excision of termen, and near tornus; some black spots on termen; cilia with a blackish line through them. Hind-wing slightly tinged with brown and with indistinct curved postmedial line.

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♀ Thorax and forewing with much more brown suffusion; hindwing strongly suffused with fuscous.

Expanse 16 millim.

Type in Coll Staudinger.

*Hab.* ARMENIA, Marash.

(18a.) * *Diptychophora strigatalis*, n. sp. (Plate III, fig. 23.)

♂ Head and thorax dark brown variegated with white; pectus and legs mostly white; abdomen dark brown with segmental white lines, the anal tuft at extremity and ventral surface white. Forewing ochreous tinged with brown towards extremity; black-brown streaks mixed with whitish scales in the interspaces to beyond middle; a very oblique whitish line from middle of costa to upper angle of cell and another with a black-brown streak above it from discocellulars to origin of vein 2; a white line with black streak above it across apical area; an oblique white line with black line on its outer edge from vein 5 near termen to vein 2 above which it is angled; streaks of brown and white scales on veins 6 and 5 joining a subterminal band of similar scales extending from them to above tornus; a brown line on apical part of termen and three black spots between vein 5 and submedian fold; cilia metallic bronze, their bases white from apex to the lower incision in termen. Hindwing dark brown, rather paler towards base; cilia white.

Expanse 14 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Sutschau.

(24a.) * *Talis menetriesi*, n. sp. (Ev. MS.) (Plate III, fig. 13.)

♂ Head, thorax and abdomen white and dark brown; antennæ tinged with white. Forewing whitish strongly irrorated with dark brown; the basal half of costal area and a fascia in and beyond end of cell pale yellow-brown; a blackish fascia in basal half of submedian fold; a dark mark followed by a white spot in upper angle of cell; an oblique dark striga below base of vein 2 and a dentate grey and dark mark above its base; a white postmedial line obliquely curved from costa to vein 6, strongly dentate to vein 2, then obsolete; some whitish marks in interspaces of terminal area, a terminal series of dark points. Hindwing grey-brown.

Expanse 36 millim.

Type in Coll. Staudinger.

*Hab.* CENTRAL ASIA, Uliassutai.

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(26a.) * *Talis pallidalis*, n. sp. (Plate III, fig. 21.)

♂ Head and thorax white slightly tinged with brown; branches of antennæ fuscous; abdomen whitish, the 1st segment dorsally ochreous. Forewing whitish irrorated with pale brown; traces of a medial line acutely angled in cell to a small elliptical white spot at upper angle; a postmedial whitish line angled inwards below costa then less distinct, minutely dentate and oblique to vein 2, then excurved. Hindwing white tinged with brown, the cilia pure white.

Expanse 34 millim.

Type in Coll. Staudinger.

*Hab.* TURKESTAN, Margellan.

## SCHŒNOBIANÆ.

### Genus NEOSCHŒNOBIA, nov.

Palpi upturned far in front of frons, the 2nd joint fringed with scales in front; maxillary palpi strongly dilated with scales and nearly as long as the labial; antennæ of female almost simple. Forewing long and narrow; vein 3 from before angle of cell; 5 from above angle; 6 from below upper angle; 7 from angle; 8, 9 stalked; 10, 11 free. Hindwing with vein 3 from before angle of cell; 5 from just above angle; 6, 7 from upper angle.

* *Neoschœnobia testacealis*, n. sp.

♀ Head and thorax pale reddish-brown; palpi below, pectus, and legs white; abdomen reddish-brown and white. Forewing pale reddish-brown of a silky texture, and slightly irrorated with darker scales; an obscure patch of darker scales in and below middle of cell; a fuscous discoidal spot; traces of a dark postmedial line oblique from costa to vein 5, then strongly incurved. Hindwing brownish-white with slight discal point.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Raddefka.

(21a.) *Scirpophaga fulvilinealis*, n. sp.

♂ White; sides of palpi and shoulders fulvous. Forewing with fulvous fascia on costa obsolescent towards apex; an erect antemedial line; a discoidal spot; the postmedial line erect from costa to vein

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4, then bent inwards to the discoidal spot; a terminal line; the lines broad.

Expanse 18 millim.

Type in Coll. Staudinger.

*Hab.* ARMENIA, Mardin.

## ANERASTIANÆ.

### *Lodiana albicostalis*, n. sp.

♂ Head white, palpi at sides and sides of frons and neck pale brown; thorax white and pale brown; abdomen white. Forewing with white costal fascia narrowing to apex; the rest of wing pale reddish-brown rather deeper towards the costal fascia, the terminal and inner areas with whitish streaks on the interspaces. Hindwing white, the costal area tinged with brown, the termen yellowish.

♀ Forewing tinged with ferruginous red; hindwing yellowish-white.

Expanse 30 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Lower Jordan.

## EPIPASCHIANÆ.

### (5a.) *Macalla lophotalis*, n. sp.

♂ Palpi with the 2nd joint short, the 3rd very long, hollowed out out and containing the long brush-like fulvous maxillary palpi.

Head, thorax and abdomen clothed with grey and black scales. Forewing grey thickly irrorated with fuscous and black; the antemedial dark line indistinct, diffused, very oblique; a discoidal point; the postmedial line indistinct, minutely dentate, oblique from costa to vein 5 then incurved; an obscure terminal series of small spots. Hindwing semi-hyaline white, tinged with fuscous towards termen especially on the veins; a dark subterminal spot on vein 2; cilia of both wings grey with a dark line through them.

♀ Head, thorax, and abdomen whiter, the last with blackish dorsal patch near base; forewing with the area to just beyond the postmedial line whiter; the lines more distinct, the antemedial line with diffused blackish band on its inner side; a black spot on middle of costa.

Expanse 32 millim.

Type in Coll. Staudinger.

*Hab.* ARMENIA, Zeitun, Mardin.



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(12a.) *Macalla amurensis*, n. sp. (Plate III, fig. 1.)

♂ Palpi with the 2nd joint hollowed out to receive the brush-like maxillary palpi; antennæ with a recurved process from basal joint extending to middle of thorax; forewing with small glandular swelling on costa.

Head, thorax, and abdomen dull olive-green thickly irrorated with black, the antennal process and extremity of abdomen blackish. Forewing dull olive-green thickly irrorated and suffused with black mixed with some rufous scales especially on medial area; the ante-medial line indistinct, slightly excurved below costa and angled inwards in submedian fold, defined by olive-green on inner side; a discoidal point; the postmedial black line defined by olive-green on outer side, minutely dentate, and strongly excurved between veins 6 and 2; a greener patch on middle of termen and terminal series of small obscure black spots; cilia chequered greenish and brown. Hindwing fuscous-brown with obscure darker subterminal spot on vein 2; cilia chequered grey and brown.

Expanse 28 millim.

Type in Coll Staudinger.

*Hab.* AMURLAND, Ussuri.

(19a.) *Stericta atribasalis*, n. sp.

♂ Maxillary palpi filiform; antennæ with the basal process very long and extending to beyond metathorax.

Head, thorax, first two and terminal three segments of abdomen black, lateral patches on 1st segment of abdomen and the three medial segments ochreous white. Forewing with the basal area deep black with nearly straight and slightly oblique outer edge; the medial area ochreous-white with oblique discoidal black striga and two small spots and a few scales on costa; the terminal area fuscous black from costa beyond middle to middle of inner margin; the postmedial line indistinct, pale, strongly bent outwards at vein 5, then nearly erect to tornus. Hindwing fuscous black, rather paler towards base; a slight pale subterminal lunule on vein 2; both wings with fine pale terminal line.

Expanse 20 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Sutschau, Askold I.

Closely allied to *S. asopialis*, Snell, from the E. Himalayas which has the base of abdomen pale and the black on terminal area of forewing not extending to the inner side of the postmedial line.

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## ENDOTRICHINÆ.

### (28a.) *Endotricha jordana*, n. sp. (Stgr. MS.)

♂ Head, thorax and abdomen pale reddish-brown to fuscous-brown; some whitish scales between antennæ, the 2nd segment of abdomen with darker dorsal band. Forewing reddish to fuscous-brown; the costa with series of semi-annulate white spots; the basal area to the antemedial line and the area beyond the subterminal line darker brown; the lines white, the antemedial somewhat excurved below costa, then oblique, the subterminal excurved at middle then sinuous to tornus; cilia dark at base, paler at tips, white from below apex to vein 5. Hindwing whitish irrorated with some dark scales and with diffused dark antemedial band; a fine postmedial line slightly angled outwards at middle; the terminal area from just beyond the postmedial line grey-brown sometimes tinged with purplish-red; cilia dark at base, whitish at type.

Expanse 16 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Jordan R., Dead Sea.

## PYRALINÆ.

### (2.) * *Ulotricha algerialis*, n. sp. (Plate III, fig. 18.)

Forewing with vein 8 absent.

♂ White; palpi with the 2nd and 3rd joints banded with rufous; frons and vertex of head marked with rufous; antennæ ringed with black; thorax mixed with pale olive-brown; abdomen with rufous segmental lines the anal tuft tipped with rufous. Forewing with some pale olive at base, then irrorated with fuscous and olive scales to the antemedial black line which is slightly bent inwards to costa; the medial area suffused with pale olive leaving the ante- and postmedial lines defined by white, irrorated with some black scales and with some rufous suffusion below end of cell; the postmedial line excurved at middle, the terminal area and cilia irrorated with rufous and dark brown forming streaks on the veins; a terminal black and line through the cilia. Hindwing pure white.

♀ Hindwing with the terminal area rather broadly suffused with brown forming streaks on the veins; a terminal punctiform line.

Expanse ♂ 18, ♀ 24 millim.

Type in Coll. Staudinger.

*Hab.* ALGIERS, Biskra.

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(1a.) *Aglossa rubralis*, n. sp. (Stgr. MS.)

♂ Bright ochreous yellow; head and thorax strongly suffused with rufous; abdomen slightly tinged with rufous. Forewing irrorated with ferruginous red; a curved sub-basal line; a somewhat oblique and diffused antemedial line from costa to submedian fold; a highly-waved medial line with spot beyond it in cell; a postmedial minutely dentate line strongly bent outwards between veins 5 and 2 and again above inner margin; a terminal series of small spots. Hindwing with traces of medial and subterminal ferruginous lines between veins 5 and 2; a terminal series of points.

Expanse 28 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Lower Jordan.

Differs from *A. pinguinalis* in its bright ochreous ground colour.

(1b.) * *Aglossa pulvercalis*, n. sp. (Plate III, fig. 2.)

♀ Pale ochreous; head and thorax thickly irrorated with dull purplish red, abdomen less thickly irrorated. Forewing thickly and evenly irrorated with dull purplish-red; a series of obscure spots on costa; traces of a dentate postmedial line strongly excurved from below costa to vein 3 and angled inwards in submedian fold. Hindwing uniform yellowish-white.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* ALGERIA, Chellala.

(1a.) * *Constantia atrisquamalis*, n. sp. (Plate III, fig. 10.)

♀ White irrorated with black scales. Forewing with the basal area slightly tinged with rufous to the antemedial white line which is edged with black on inner side, oblique from costa to submedian fold, then erect; two slight black streaks with some fuscous between them beyond upper angle of cell before the postmedial line which is edged with black on inner side, incurved from costa to vein 6, excurved to vein 3, then retracted to below end of cell and slightly sinuous to inner margin; a pale rufous spot with two slight black streaks beyond the line below costa and slight rufous suffusion on inner area; the termen obscurely chequered with black; cilia with fine black line through them and black tips. Hindwing white with curved dark subterminal line almost obsolete except near middle;

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traces of a line through the cilia which are mixed with black at middle.

Expanse 18 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Jordan.

(3a.) *Constantia persinualis*, n. sp.

Head, thorax and abdomen fulvous mixed with white. Forewing white suffused with pale fulvous; the antemedial line black defined by white on outer side, oblique from costa to submedian fold where it is angled, then erect; the costa between the lines white irrorated with fuscous; a white patch and fuscous point at upper angle of cell; the postmedial line white, incurved below costa, sinuous to submedian fold, then retracted to origin of vein 2, strongly dentate on outer side in submedian fold, and with fuscous-irrorated white suffusion on its inner side from vein 6 to inner margin forming a large patch in the sinus and on inner margin extending to antemedial line; cilia chequered fuscous and white, their tips fuscous. Hindwing white with slight brown subterminal and terminal marks at vein 2.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Jordan.

(4a.) * *Constantia sanctalis*, n. sp. (Stgr. MS.)

(Plate III, fig. 15.)

♂ White strongly irrorated with fuscous-brown. Forewing with the antemedial line arising from median nervure, strongly angled outwards in submedian fold, and oblique from vein 1 to inner margin; an ill-defined patch of dark scales in middle of cell; the postmedial dark line oblique, dentate on outer side and diffused on inner side from costa to vein 3, then bent inwards, fine and indistinct; a fine terminal black line and line through the cilia. Hindwing white suffused and irrorated with pale brown, the cilia white.

Expanse 18 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA.

(5a.) *Constantia caidalis*, n. sp. (Stgr. MS.)

♂ Head, thorax and abdomen white tinged with ochreous and irrorated with dark brown. Forewing white tinged with reddish-ochreous and strongly irrorated with dark brown; the antemedial

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line reddish-ochreous slightly sinuous and oblique with some black scales on its edges in submedian interspace; a reddish-ochreous streak in and beyond end of cell with dark point before it and small discoidal annulus; the postmedial line reddish-ochreous with dark line on its inner side from costa to vein 3, bent outwards and dentate between veins 6 and 3, then retracted to origin of vein 2, below which there is a black point, and bent strongly outwards again to inner margin; a terminal series of dark striæ. Hindwing ochreous strongly irrorated with fuscous; traces of a pale dentate subterminal line between veins 5 and 2; cilia white.

Expanse 30 millim.

Type in Coll. Staudinger.

*Hab.* ALGERIA, Biskra.

Closely allied to *C. pectinalis*, H. S., from which the reddish colour of the forewings and the fuscous irroration of the hindwings are the chief points of distinction.

(5a.) *Constantia fuscisectalis*, n. sp.

♂ Head, thorax and abdomen white mixed with fawn colour. Forewing fawn colour, some dark scales on edges of white markings; an antemedial white band angled outwards below costa and cell, then sinuous; a white mark in end of cell with fuscous points before it and beyond it on discocellulars, a white-irrorated fuscous streak from it across the postmedial line to tornus; the postmedial line white with dark inner edge, bent outwards and minutely dentate between veins 6 and 3, then retracted to below end of cell and angled outwards in submedian fold; a terminal series of dark points on dentate white marks. Hindwing fuscous-brown, whiter towards base; traces of a curved postmedial line with whitish mark beyond it at vein 2; some white points on termen; cilia white.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Dead Sea.

(6a.) *Constantia argentalis*, n. sp. (Stgr. MS.)

♂ Head, thorax and abdomen white suffused in parts with fawn colour. Forewing fawn colour, the costal area whiter; the inner margin white to middle; an oblique silvery white band from subcostal nervure near base ending in a point near middle of inner margin; a rounded spot in middle of cell emitting points on inner and outer sides; an elliptical spot at upper angle of cell; the postmedial line oblique and irregularly dentate from costa to vein 3 with

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some fuscous suffusion on its inner side, then retracted to a dentate spot below end of cell separated from a wedge-shaped spot on vein 1 connected by an oblique line with middle of inner margin; some brown suffusion towards apex; cilia chequered brown and white. Hindwing pale ochreous-yellow, whiter towards base; an indistinct curved postmedial line; cilia white.

♀ Rather paler; hindwing white, the terminal half slightly tinged with yellow.

Expanse ♂ 30, ♀ 34 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Jordan.

(7a.) *Constantia numidalis*, n. sp. (Stgr. MS.)

White irrorated with dark brown and fuscous. Forewing with black antemedial line oblique from costa to submedian fold, angled inwards on vein 1 and again oblique, with traces of a line on its inner side; a white streak in and beyond end of cell with fine dark streak above it; a white streak below end of cell; the postmedial line black defined by white on outer side, bent outwards and minutely dentate between veins 6 and 4 then strongly incurved to inner margin beyond middle; an oblique dark mark beyond it from apex and a dentate spot on vein 1; a terminal series of black strigæ; cilia with black patches. Hindwing white, the terminal half slightly irrorated with brown; an indistinct curved subterminal line from costa to submedian fold; a dark terminal line.

The form from Syria has the antemedial line of forewing distinctly double, the spot on vein 1 beyond the postmedial line more prominent; hindwing strongly irrorated with dark brown especially towards the subterminal line.

Expanse 30 millim.

Type in Coll. Staudinger.

*Hab.* ALGERIA, Biskra; SYRIA, Lower Jordan.

(7b.) * *Constantia canifusalis*, n. sp. (Plate III, fig. 16.)

♂ Head, thorax and abdomen white largely mixed with pale brown. Forewing white slightly suffused with pale yellow-brown and strongly irrorated with dark brown; an antemedial white line acutely angled outwards in submedian fold and inwards on vein 1; a short white streak in and beyond end of cell with fuscous spots before it and on discocellulars; the postmedial line white minutely dentate, bent outwards between veins 6 and 3, then retracted to below end of cell and angled outwards in submedian fold; some white and fuscous suffusion beyond the antemedial line, on medial part of

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costa and on inner side of postmedial line; cilia chequered brown and white. Hindwing pale yellow-brown irrorated with darker brown; an obscure postmedial dark line from costa to submedian fold with white patch before and beyond it at vein 2; cilia white chequered with brown at base.

♀ Forewing with fuscous and white suffusion from lower angle of cell obliquely across the postmedial line to tornus; hindwing fuscous, the termen white with dark points towards apex; cilia white.

Expanse ♂ 26, ♀ 28–30 millim.

Type in Coll. Staudinger.

*Hab.* ALGERIA, Biskra; SYRIA, Jordan.

Sect. III (*Macroctenia*, Rag. MS.). Antennæ of male bipectinate to apex with long branches.

(12.) *Constantia leucographalis*, n. sp. (Rag. MS.)

♂ Head and thorax white variegated with fulvous and irrorated with black; the branches of antennæ and tips of patagia black; abdomen white. Forewing fulvous irrorated with large erect black scales before the antemedial line and on medial area; a white subbasal point; the antemedial line white angled outwards in submedian fold where there are some long white scales on it, then inwards on vein 1; a white spot in end of cell with black point before it, a spot beyond the cell with black point above it, and a medial spot below the cell; the postmedial line white defined by black on inner side angled inwards at vein 6, then excurved to vein 3 where it is retracted to below end of cell; a terminal series of black lunules with white line on their inner side joined by short streaks on the veins with some black on their edges; cilia white, yellowish at base with black line through them and black tips. Hindwing white suffused with fuscous; a curved dark subterminal line defined with white on outer side; a dark terminal line.

Expanse 26 millim.

Type in B. M.

*Hab.* SPAIN, Murcia, Algecaras.

(13.) *Constantia oxodontalis*, n. sp.

♂ Brown; head and pectus whitish. Forewing with elliptical black-edged spot below cell near base with a similar curved fascia from immediately below it to middle of vein 2 where its lower edge is continuous with the black postmedial line which is obsolescent near costa, then strongly dentate to vein 3 and with a long tooth inwards above vein 2, all these markings defined by white and with

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greyish suffusion inside them; two obscure discoidal points; cilia of both wings whitish. Underside largely suffused with whitish.

Expanse 32 millim.

Types in Coll. Rothschild and B. M.

*Hab.* C. ASIA, Kupot-dagh, Geok-tepe.

(2a.) * *Actenia phæalis*, n. sp. (Plate III, fig. 25.)

Head ochreous-white, palpi at sides and vertex of head tinged with brown; antennæ with the shaft ringed with brown; throax fuscous-brown and black; pectus, legs and abdomen whitish thickly irrorated with fuscous. Forewing leaden fuscous, thickly irrorated with black; a diffused antemedial black line bent inwards to costa; an obscure discoidal spot; some white points on costa between the lines; a slightly sinuous diffused postmedial black line; a terminal series of obscure black spots. Hindwing fuscous with indistinct curved post-medial dark line.

Expanse 24 millim.

Type in Coll. Staudinger.

*Hab.* ALGERIA, Guelma.

(4a.) *Actenia serratalis*, n. sp.

Antennæ of male uniserrate.

Red-brown with a vinous tinge and strongly irrorated with fuscous. Forewing with antemedial black line strongly excurved below costa, then oblique; the postmedial line slightly excurved at middle; a terminal line and line through the cilia. Hindwing rather paler and more suffused with fuscous especially in male; a slight discoidal fuscous spot, a curved postmedial line, a terminal line and a line through the cilia.

Expanse ♂ 18, ♀ 20 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Sutschau.

(1a.) *Cledeobia chellalalis*, n. sp. (Stgr. MS.)

♂ Head whitish; palpi at sides and central part of frons brown; thorax brown irrorated with whitish; pectus, legs and abdomen whitish irrorated with brown. Forewing pale brown thickly irrorated with dark brown; the antemedial line white running out to a long acute angle in submedian fold; a narrow < shaped white mark in end of cell; numerous white points on costa between the lines; the postmedial line white, minutely waved, emitting an acute point towards end of cell above vein 5 and a long acute tooth in submedian

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fold to join the angle of the antemedial line; cilia with a whitish line through them. Hindwing whitish thickly irrorated with brown; a curved whitish postmedial line; cilia whitish mixed with brown at base.

♀ Very much paler and slightly irrorated with dark brown. Forewing with the lines dark with obscure whitish outlines on inner and terminal sides; a dark discoidal point; the < shaped mark in cell absent, hardly a trace of the teeth from antemedial and postmedial lines in submedian fold or that above vein 5.

Expanse ♂ 26, ♀ 22 millim.

*Hab.* ALGERIA, Chellala, Biskra.

(2a.) * *Cledeobia amuralis*, n. sp. (Plate III, fig. 32.)

♂ Dark brown; palpi at base, streaks on legs and ventral surface of abdomen pale. Forewing with the inner half of medial area and the terminal area darker brown; a pale highly-curved antemedial line; the medial area with white points on costa; a pale postmedial line with whitish marks on it, angled inwards in submedian fold; cilia with a whitish line through them. Hindwing very dark brown with oblique whitish medial line almost obsolete except between veins 5 and 1; cilia whitish, dark at base.

♀ Paler yellow-brown; forewing narrower and uniform yellow-brown except for traces of the pale postmedial line; hindwing with the pale line more developed and diffused.

Expanse 24 millim.

Type in Coll. Staudinger.

*Hab.* UPPER AMUR.

## HYDROCAMPINÆ.

(17a.) *Parthenodes sutschana*, n. sp. (Stgr. MS.)

♀ Head and thorax rufous slightly mixed with white; legs white, the tarsi ringed with brown; abdomen rufous with whitish bands at base of segments, and dark lines at extremities. Forewing rufous suffused with black-brown on ante- and postmedial areas; an indistinct whitish antemedial line acutely angled outwards in cell and submedian fold and inwards on median nervure and vein 1, with a white spot beyond it on costa; a small white-edged oblique wedge-shaped postmedial spot on costa with the dark postmedial line arising from it, white-edged in places, strongly incurved between veins 7 and 4, then incurved and sinuous to inner margin; a dark-edged maculate white subterminal line dentate inwards on veins 7, 6, then somewhat excurved; a dark terminal line with slight white marks

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before it; a dark line through the cilia. Hindwing white with patch of dark brown on basal area in and below cell; the ante- and postmedial lines brown, sinuous, conjoined above tornus, the former defined by white on inner side and arising from middle of cell, the latter defined by white on outer side and angled inwards below costa, some rufous suffusion before it conjoined to a discoidal spot; the terminal area dark brown with maculate sinuous subterminal white line ending on termen before tornus; a dark terminal line and line through the cilia.

Expanse 24 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Sutschau.

(3a.) *Stenia ferrealis*, n. sp.

♂ Ferruginous brown; palpi white at base; frons white at sides; antennæ ringed with white; abdomen banded with white; pectus, legs and ventral surface of abdomen partly white. Forewing irrorated with white; a white point at base; a waved white antemedial line angled outwards on vein 1; a waved white postmedial line bent outwards between veins 6 and 3, then retracted to below end of cell and angled outwards in submedian fold; a series of small white spots just before termen; cilia paler at tips. Hindwing duller ferruginous brown; cilia pale at tips.

Expanse 20 millim.

Type in Coll. Staudinger.

*Hab.* ARMENIA, Mardin.

(6a.) * *Stenia flavipunctalis*, n. sp. (Plate III, fig. 8.)

♂ Head, thorax and forewing dark reddish-brown with the bases of the scales pale; palpi orange below; antennæ with the raised scales whitish. Forewing with a prominent orange discoidal spot; faint traces of a curved postmedial line; cilia black-brown; abdomen and hindwing black-brown.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* SPAIN, Algarbien (Korb).

## PYRAUSTINÆ.

(5a.) * *Entephria tylostegalis*, n. sp. (Plate III, fig. 6.)

♂ Forewing on underside with fringe of large curved scales in cell arising from subcostal nervure, and fovea on upperside.

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Ochreous, head, tegulæ, patagia and thorax with patches of black; tibiæ and tarsi ringed with black; abdomen with dorsal and ventral black patches except on terminal segments. Forewing with black marks at base; a sub-basal fuscous band from below costa to inner margin; a curved antemedial band; some dark marks round the fovea; the postmedial line curved from costa to vein 5, then outwardly oblique to vein 2 on which it is retracted to lower angle of cell, with a broad area of fuscous suffusion on its inner side, below the cell conjoined to suffusion beyond the antemedial band; the terminal area with patches of fuscous from below costa to vein 3 and from angle of postmedial line to tornus; a terminal series of black points. Hindwing with the basal area paler; a sub-basal fuscous mark on inner area; a discoidal point; conjoined postmedial and subterminal fuscous maculate patches from vein 6 to inner margin at middle and tornus; a subterminal patch from costa to vein 3; a terminal series of black points; both wings with dark line at base of cilia.

Expanse 24 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Ussuri; WESTERN CHINA.

Resembles the species of the genus *Nacoleia*, sect. *Tylostega* in pattern and in structure except palpi.

(6.) * *Tabidia strigiferalis*, n. sp. (Plate III, fig. 30.)

♂ Forewing without tuft of scales from base of median nervure.

Pale ochreous; fore femora striped with black, the tibia banded with black; abdomen with fine ventral black streak except on terminal segments. Forewing with basal black point; antemedial blackish spots in and below cell and on inner margin, the one below the cell nearer the base; spots in middle of cell and on discocellulars; a series of short black streaks excurved round end of cell, then incurved to middle of inner margin; a subterminal series of points excurved from costa to vein 3, then bent inwards to below end of cell with dark mark beyond it near tornus; traces of some fuscous streaks in terminal interspaces. Hindwing paler and semihyaline with indistinct curved subterminal series of dark points and slight dark marks on termen towards tornus.

Expanse 24 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Chabarofka.

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(10a.) * *Pilocrocis contortalis*, n. sp. (Plate III, fig. 11.)

♂ Hind tibiæ with fringes of hair on each side towards extremity, the first joint of tarsus with thick tuft above; thorax with tuft of long hair from below origin of forewing and shorter tuft from below hindwing, the fringe of patagia extending beyond metathorax.

Head and thorax yellowish-white, palpi at sides, frons above and patagia rufous; legs above and tufts on hind legs rufous; abdomen rufous with dorsal series of whitish spots and lateral white line. Forewing pale yellow, the veins and margins rufous; an indistinct sub-basal line angled above inner margin; a rufous antemedial line oblique from costa to vein 1, where it is obtusely angled; a point in middle of cell and large discoidal lunule conjoined to costal fascia; the postmedial line oblique from costa to above vein 6 where it is acutely angled, then incurved, at vein 5 excurved and crenulate to vein 2, then retracted to discoidal lunule, then running to inner margin with an acute tooth in submedian fold; dark points on costa towards apex; the terminal band expanding below vein 2. Hindwing semihyaline yellowish-white; a rufous fascia on inner area from middle to termen; the terminal area rufous from costa to submedian fold above which it runs inwards to lower angle of cell; a minutely waved dark rufous line from lower angle of cell round a hyaline spot beyond the cell up to vein 5 with some yellow spots in the interspaces beyond it; the cilia dark rufous to submedian fold.

Expanse 36 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Ussuri.

Resembles *Chalcidoptera rufilinealis*, Swinh., from India.

(7a.) * *Evergestis lichenalis*, n. sp. (Plate III, fig. 20.)

♂ Head and thorax dark brown with a few white scales; palpi at base of 1st and 2nd joints, basal joint of antennæ, and a streak on upperside of shaft white; abdomen white tinged with brown. Forewing dark brown; a white streak on base of median nervure; a broad oblique white antemedial band mixed with brown scales, bent inwards to costa, diffused on inner side where there are some blackish marks, and defined on outer side by a blackish line; dark points in and beyond upper angle of cell; a minutely dentate black postmedial line, dentate outwards at vein 6, and below vein 3 strongly incurved, with a large patch of white suffusion before and beyond it from costa to vein 3, and defined by white on each side towards inner margin; a white subterminal line from vein 5 to inner margin, incurved below vein 3; some white on termen and a series of points; cilia brown

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intersected with white. Hindwing white tinged with brown; a curved dark postmedial line from costa to vein 2, where there is a dark point beyond it on a whitish patch; a terminal brown band broad at costa, narrowing to a point at vein 2; a terminal series of brown points; cilia white with brownish spots near base and a brown patch at middle.

Expanse 32 millim.

Type in Coll. Staudinger.

*Hab.* CENTRAL ASIA, Saisan.

Differs from *E. vegetalis* principally in the broad white antemedial band with nearly straight outer edge, and the large white patch on the costal half of postmedial line.

(8a.) * *Phlyctænodes leucalis*, n. sp. (Plate III, fig. 14.)

♂ Head and thorax pale olive-brown; palpi below and sides of frons white; abdomen white tinged above with pale olive-brown. Forewing white tinged with pale olive-brown; an indistinct oblique waved white line from middle of cell to inner margin; traces of a discoidal spot; a minutely waved white postmedial line, obliquely incurved below vein 3; an indistinct minutely waved subterminal line; an indistinct terminal band with waved inner edge. Hindwing white; a curved pale olive-brown postmedial line from costa to submedian fold; a diffused terminal band from apex to vein 2, and a fine terminal line.

Expanse 32 millim.

Type in Coll. Staudinger.

*Hab.* CAUCASUS, Chwalinsk.

(8a.) * *Phlyctænodes stramineralis*, n. sp. (Plate III, fig. 22.)

♂ Head and thorax pale ochreous yellow; palpi at sides and frons tinged with brown; abdomen whitish. Forewing pale yellow; the basal half of costal edge brown; a very indistinct pale brown antemedial line, oblique from costa to submedian fold where it is angled; the postmedial line distinct, broad, slightly excurved from costa to vein 3, then oblique; an indistinct oblique subterminal line. Hindwing white tinged with ochreous; pale brownish postmedial and subterminal lines from costa to submedian fold.

Expanse 32 millim.

Type in Coll. Staudinger.

*Hab.* ASIA MINOR.

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Differs from *P. turbidalis* in the forewing being more uniform and brighter yellow, and neither wing having the fine dark terminal line.

(19a.) * *Phlyctænodes phæoneuralis*, n. sp.

(Plate III, fig. 12.)

♀ Pure white; palpi at sides, frons, antennæ, stripes on shoulders and legs and bands on terminal half of abdomen dark brown. Forewing with the costal edge and veins streaked with brown; a brown antemedial line oblique to submedian fold where it is angled; a point in middle of cell and discoidal lunule; the postmedial line excurved from costa to vein 3, then strongly incurved and in submedian fold diffused inwards to the antemedial line; a waved subterminal line and fine dark terminal line. Hindwing with postmedial series of short dark streaks on the veins from costa to vein 2; a similar terminal series connected by fuscous towards apex; a fine dark terminal line.

Expanse 34 millim.

*Hab.* SIBERIA, Krasnowodsk.

Type in Coll. Staudinger.

Differs from *P. clathralis* chiefly in the postmedial line of forewing being strongly incurved to costa.

(21a.) * *Phlyctænodes rhabdalis*, n. sp. (Plate III, fig. 4.)

Head and thorax pale olive-brown and yellowish-white; abdomen white with obscure fuscous band. Forewing yellowish-white with yellowish and pale olive-brown fasciæ on costal area and median nervure; a prominent olive-brown streak in submedian fold from near base to postmedial line towards which it expands; a streak on inner margin; an elliptical spot in middle of cell and discoidal lunule; short streaks on veins 2, 3, 4 to the fine postmedial line which is oblique from costa to vein 3, then incurved, often more or less interrupted; a subterminal band bent outwards to apex and not quite reaching inner margin; a terminal line; cilia white with brown lines at base and near tips. Hindwing white tinged with brown on inner area and towards the curved postmedial line; an almost terminal band, a terminal line and line at base of cilia.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* CENTRAL ASIA, Kuldja.

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Differs from *P. comptalis* in the antemedial line of forewing being obsolete and the subterminal band not excurved at middle to termen.

(40a.) * *Phlyctænodes subhyalinalis*, n. sp.

Head and thorax white mixed with olive-brown; antennæ ringed white and olive-brown; abdomen white with indistinct brown bands. Forewing white, thickly irrorated with large olive-brown scales; a white patch at base of inner area; the antemedial line white angled outwards in submedian fold; the medial area less thickly irrorated leaving an olive point in middle of cell, a large discoidal spot, and bands of olive on outer side of antemedial line and before the white postmedial line which is strongly excurved from below costa to vein 3; a series of short white streaks in the interspaces just before termen; a darker terminal line. Hindwing semihyaline white, the termen irregularly irrorated with dark brown, most widely at apex.

Expanse 22 millim.

Type in B. M.

*Hab.* SYRIA, Jordan; PUNJAB, Cambellpore.

(62.) *Phlyctænodes foviferalis*, n. sp.

Forewing of male with a small fovea beyond the cell at origin of vein 6; a scale-tooth on inner margin before middle.

Pale ochreous; palpi at base, maxillary palpi at tips, sides and a streak on middle of frons and vertex of head white; pectus, legs and ventral surface of abdomen whitish. Forewing with indistinct diffused ferruginous antemedial line oblique from costa to submedian fold where it is angled; points in middle of cell and on discocellulars; a fuscous postmedial line with some diffused brown on its outer edge angled outwards at vein 6, then oblique and slightly sinuous. Hindwing yellowish-white, the termen tinged with brown; an indistinct curved postmedial line; cilia with a brown line through them.

Expanse 12 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Beirut.

(11.) * *Diasemia lætalis*, n. sp. (Stgr. MS.)

(Plate III, fig. 27.)

Head, thorax, and abdomen yellow tinged with fulvous; palpi white at base; abdomen with pale segmental lines. Forewing bright

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yellow; the costal area and base of cell suffused with fulvous; an antemedial fulvous line oblique from costa to submedian fold where it is angled; a large elliptical spot in middle of cell with line from it to inner margin; a quadrate discoidal spot irrorated with grey; a postmedial line slightly sinuous from costa to vein 3 then bent inwards to below end of cell and with a diffused grey-irrorated fulvous band beyond it leaving some small yellow spots on outer edge of the line from costa to vein 3; the veins of terminal area streaked with fulvous; cilia tinged with fulvous, the bases darker. Hindwing bright yellow; a medial rufous line angled inwards in submedian fold where there is some rufous irroration before it; a postmedial line slightly bent inwards at middle, the area beyond it suffused with fulvous leaving some yellow on outer edge of costal half of the line and on termen.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* TURKESTAN, Namangan.

(3.) * *Lepidoneura grisealis*, n. sp. (Plate III, fig. 24.)

♂ Grey; head and thorax tinged with yellow-brown; palpi below and sides of frons white. Forewing irrorated with yellow-brown especially on costal area; an obscure antemedial point on vein 1; an indistinct oblique series of short dark streaks on the veins from vein 6 to middle of vein 1; an obscure waved subterminal line from vein 7 to 1; a dark terminal line and line through the cilia. Hindwing irrorated with pale yellow-brown; a dark terminal line and faint line through the cilia.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* CENTRAL ASIA, Kuldja.

(1a.) * *Calamochrous pallidalis*, n. sp.

♀ Head and thorax whitish tinged with brown; palpi below, sides of frons, pectus, legs and abdomen white. Forewing whitish tinged with brown especially on costal half; the costal edge and veins of terminal area white; a fine dark terminal line interrupted by the white veins and points in the interspaces; cilia white with a dark line through them. Hindwing whitish tinged with brown especially towards apex; a dark terminal line interrupted by the



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whitish veins and points in the interspaces; cilia whitish with a dark line through them.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* CENTRAL ASIA, Margellan.

(6.) *Cybolomia inglorialis*, n. sp. (Zell. MS.)

Head and thorax grey-brown irrorated and suffused with reddish-brown; palpi below and sides of frons white; abdomen fuscous above, the extremity, ventral surface, pectus and legs white. Forewing greyish-ochreous irrorated and the costal and terminal areas suffused with reddish-brown; a sinuous dark antemedial line; a spot in cell and discoidal lunule; the postmedial line sinuous, bent outwards between veins 6 and 3, then retracted to near origin of vein 2 and bent outwards again; a terminal series of spots and two lines through the whitish cilia. Hindwing suffused and irrorated with fuscous brown especially on terminal area; a subterminal ochreous spot on vein 2; cilia white with a dark line near base.

Expanse 20–22 millim.

Type in B. M.

*Hab.* CENTRAL ASIA, Scharud, Samarkand.

(1.) *Cynæda dentalis*, Schiff., subsp. *furiosa*, nov. (Stgr. MS.)

Differs from the typical form in the pale olive-brown markings being replaced by bright red-brown; hindwing entirely suffused with red-brown, the terminal area often tinged with fuscous, or the whole wing suffused with fuscous; size larger.

Expanse 34 millim.

*Hab.* CENTRAL ASIA, Margellan.

Some specimens from Amasia and Syria are intermediate between this and the typical form both in colour and size.

(4a.) * *Metasia albicostalis*, n. sp.

♂ Head, thorax and abdomen dull reddish-brown; palpi below, throat and sides of frons white; legs white and brown; abdomen with segmental white lines. Forewing pale ochreous thickly irrorated with dull reddish-brown; the costa white from before middle to apex; the lines dark; the antemedial line indistinct, bent inwards to costa; a dark-edged discoidal spot; the postmedial line

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curved from costa to vein 2, then retracted to lower angle of cell; a dark terminal line; cilia dark at base white at tips. Hindwing rather browner; the postmedial line excurved between veins 5 and 2, then retracted to origin of vein 2; a dark terminal line and two lines through the cilia.

Expanse 16 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Beirut.

Differs from *M. carnealis* in the forewing having the postmedial line curved towards costa, and in both wings retracted to median nervure.

(25a.) *Metasia sancta*, n. sp. (Stgr. MS.)

Head, thorax and abdomen white slightly tinged with brown. Forewing yellowish-white pencilled with yellow-brown scales, the base white, conjoined below the cell to the waved sub-basal band; a waved antemedial band; a patch on costa just beyond middle with an excurved line from it to median nervure; more or less developed diffused patches of black scales beyond the cell, below its extremity, and above inner margin; a waved postmedial white line strongly excurved between veins 7 and 4; a line from apex to termen at submedian fold, expanding at apex; a fine dark terminal line; cilia white mixed with pale yellow-brown. Hindwing yellowish-white.

Expanse 20 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Lower Jordan.

Closely allied to *M. monialis*, Ersch, which has the medial lines of forewing different and a series of eight small black spots.

(3a.) * *Titanio hesperialis*, n. sp. (Plate III, fig. 5.)

♂ Head, thorax and abdomen black with some grey hair; distal part of legs and anal tuft white. Forewing clothed with black, grey, and a few pale fulvous scales; a large black discoidal spot with a white band beyond it from costa to vein 2 becoming pale fulvous at costa and with waved edges; a whitish band on termen from vein 7 to 1 with a series of black points on it; cilia white with black bases towards apex, the rest brownish with white tips. Hindwing black, greyish towards tornus and from costa at apex to a point on vein 2; a postmedial triangular white patch from costa to submedian fold; cilia white.

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♀ Forewing with the white band beyond the postmedial spot reduced to a striga, the band on termen to a spot above vein 2; hindwing with the white patch smaller; abdomen whitish at sides and below, the anal tuft dark.

Expanse 20 millim.

Type in Coll. Staudinger.

*Hab.* CENTRAL ASIA, Uliassutai.

(12.) * *Titanio metaxanthalis*, n. sp. (Plate III, fig. 29.)

♀ Head, thorax and abdomen black mixed with grey; palpi below and sides of frons white; abdomen with the segments ringed with white. Forewing pale almost entirely suffused with black-brown; traces of an antemedial line oblique from costa to submedian fold where it is angled; a black spot in middle of cell and prominent large discoidal spot; the postmedial line strong, nearly straight from costa to vein 4, then bent inwards to below end of cell; an obscure terminal series of spots. Hindwing orange-yellow; the base and inner margin black-brown; a large oblique black discoidal spot; a curved black postmedial line not reaching costa; a terminal black band.

Expanse 16 millim.

Type in Coll. Staudinger.

*Hab.* CENTRAL ASIA, Alexander Mountains.

(19a.) * *Pionea ferrealis*, n. sp. (Plate III, fig. 19.)

♂ Head and front of thorax rufous, back of thorax greyish; palpi below, pectus and legs greyish; abdomen greyish, dorsally rufous towards base. Forewing rufous; a fine antemedial line very oblique from costa to median nervure then very sinuous; an elliptical darker rufous spot in middle of cell and somewhat S-shaped discoidal spot; a minutely dentate postmedial line, curved from costa to vein 3 then oblique; a terminal band with dentate inner edge; cilia pale with a line through them and tips rufous. Hindwing whitish suffused with pale brown especially on inner and terminal areas; a dark point at lower angle of cell; a curved minutely dentate postmedial line; cilia whitish with a pale brown line near base.

Expanse 32 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Radefka.

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(21a.) * *Pionea perfervidalis*, n. sp. (Plate III, fig. 3.)

♀ Head and thorax ferruginous red; palpi white below; pectus, legs and abdomen white and brown. Forewing pale ferruginous red thickly irrorated with deep ferruginous; the antemedial line rather indistinct incurved; a dark-edged discoidal spot; the postmedial line slightly curved from costa to vein 3 then retracted to below end of cell and excurved again; a series of slight points on termen; cilia brownish. Hindwing ochreous whitish irrorated with brown except on basal and inner areas; a prominent brown discoidal spot; the postmedial line sinuous, strongly excurved between veins 5 and 2, then retracted to below end of cell; a terminal series of points; cilia with a brown line through them.

Expanse 22 millim.

Type in Coll. Staudinger.

*Hab.* SYRIA, Beirut.

(86a.) *Pionea vestalis*, n. sp. (Stgr. MS.)

♂ Head white; palpi tinged with brown at sides; thorax very pale sulphur-yellow; abdomen white tinged with brown. Forewing very pale sulphur-yellow; a fine indistinct pale brown line from vein 2 to base of inner margin; a similar postmedial line excurved from below costa to vein 3, where it is incurved, then curved round to join the first line on vein 1 near base; cilia white. Hindwing white slightly tinged with pale rufous; the termen pale rufous; cilia white.

Expanse 24 millim.

Type in Coll. Staudinger.

*Hab.* ARMENIA, Mardin.

(121a.) *Pionea albescentalis*, n. sp.

Dirty white; head and tegulæ slightly tinged with ochreous; palpi brown at sides; legs marked with brown; wings with the interspaces very slightly shaded with fuscous especially towards termen. Underside of fore-wing fuscous except marginal areas.

Expanse ♂ 26, ♀ 22 millim.

*Hab.* ARMENIA, Mardin.

(121b.) * *Pionea albifuscalis*, n. sp. (Plate III, fig. 31.)

♂ Dirty white; palpi at sides and base of maxillary palpi brown; fore and hindlegs tinged with brown above. Forewing with the

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costa brown towards base. Hindwing suffused with fuscous brown; the cilia white. Underside of forewing suffused with fuscous except marginal areas.

Expanse 32 millim.

Type in Coll. Staudinger.

*Hab.* TURKESTAN, Namangan.

(121c.) * *Pionea leucopeplalis*, n. sp. (Plate III, fig. 7.)

♂ White; palpi at sides and base of maxillary palpi rufous; thorax and base of abdomen slightly tinged with ochreous. Forewing slightly irrorated with brown scales; the costa rufous towards base; the basal area slightly tinged with ochreous. Hindwing pure white. Underside of forewing fuscous except marginal areas.

Expanse 34 millim.

Type in Coll. Staudinger.

*Hab.* CENTRAL ASIA, Samarkand.

(16a.) * *Pyrausta furvicoloralis*, n. sp.

♂ Rufous; palpi white below; frons white at sides; pectus, legs, and ventral surface of abdomen white below. Forewing with the costa dark brown; an oblique sinuous antemedial line excurved below costa and angled inwards below vein 1; a point in middle of cell and discoidal line; the postmedial line bent outwards and minutely dentate between veins 7 and 3, then retracted to below end of cell and angled outwards in submedian fold; cilia dark brown. Hindwing pale, suffused and irrorated with dark and yellow-brown; the postmedial line excurved between veins 6 and 3, then retracted and excurved again; a dark terminal line; cilia dark brown at base; white at tips.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Sutschau.

(29a.) * *Pyrausta ecteinalis*, n. sp.

♂ Hind tibia with the outer medial spur minute; mid tibia with fold and tuft. Head and thorax brownish ochreous tinged with fuscous; palpi dark brown, white at base; abdomen white tinged with ochreous. Forewing produced at apex, the termen oblique; brownish ochreous tinged with fuscous; a sinuous fuscous antemedial line bent inwards to costa; a discoidal lunule; a waved

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postmedial line excurved between veins 6 and 3, then retracted to below end of cell; cilia fuscous, whitish at tips. Hindwing whitish strongly suffused with ochreous brown; a fuscous postmedial line excurved from below costa to vein 3, then oblique; cilia whitish with a dark line at base.

Expanse 32 millim.

Type in Coll. Staudinger.

*Hab.* TURKESTAN, Korla.

(29a). *Pyrausta discimaculalis*, n. sp.

♂ Fuscous brown; palpi below, a point on vertex of head, legs, ventral surface of abdomen and genital tuft whitish. Forewing irrorated with grey; a very indistinct waved dark antemedial line; a dark point in cell and discoidal lunule with prominent ochreous white spot between them; the postmedial line dentate defined by slight pale marks on outer side, excurved between veins 6 and 3 then bent inwards to below end of cell, dentate outwards in submedian fold and inwards on vein 1, an indistinct terminal series of dark points. Hindwing with pale punctiform postmedial line excurved from costa to vein 3, then angled inwards to below end of cell and ending at tornus; cilia whitish at tips.

Expanse 38–42 millim.

Type ♂ in B. M.

*Hab.* AMURLAND, Sutschau; JAPAN.

(34a.) * *Pyrausta griseofumalis*, n. sp.

♂ Thorax with a tuft of hair from base of forewing below.

Dark grey-brown; palpi at base, sides of frons, pectus, greater part of legs, segmental lines on abdomen and ventral surface white. Forewing irrorated with grey; a pale point at base; an indistinct pale antemedial line angled outwards in submedian fold; a pale spot in end of cell and dark discoidal point; an indistinct dark postmedial sinuous line oblique from costa to vein 2 where it is retracted to near origin of vein 2, then excurved again, a pale mark on its inner edge beyond the cell and some pale marks on its outer edge; an indistinct subterminal series of pale points. Hindwing irrorated with grey; a pale subterminal point on vein 2; cilia whitish, brown at base.

Expanse 24 millim.

Type in Coll. Staudinger.

*Hab.* TRANSCAUCASIA, Ordubad.

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(46a.) * *Pyrausta cœnalis*, n. sp.

♂ Ochreous; head and front of thorax slightly tinged with rufous; palpi rufous. White below; wings irrorated with fuscous. Forewing with indistinct waved antemedial line; a point in cell and discoidal lunule; the postmedial line dentate, strongly excurved between veins 7 and 3 then incurved to below end of cell; an indistinct subterminal series of dark spots in the interspaces; hindwing with the basal area suffused with fuscous; the postmedial line excurved between veins 6 and 2 then retracted to below end of cell and excurved again; a subterminal series of indistinct dark marks in the interspaces.

Expanse 30 millim.

Type in Coll. Staudinger.

*Hab.* AMURLAND, Chabarofka.

(68a.) * *Pyrausta pachyceralis*, n. sp. (Plate III, fig. 26.)

♂ Antennæ somewhat laminate;

Head and thorax brownish ochreous; palpi below and sides of frons white; pectus, legs and abdomen white. Forewing brownish-ochreous; traces of a pale antemedial line angled inwards in submedian fold; a pale medial line angled inwards in cell, outwards on median nervure, then oblique and with dark points on the veins on its outer edge; an obscure dark-edged pale discoidal spot; a pale postmedial line, bent inwards to costa, then slightly excurved to vein 3, with dark points on the veins on its inner side and a dark shade on its outer edge, at vein 6 bent out to apex. Hindwing whitish with postmedial series of dark points on veins 5–2; the termen tinged with ochreous; some brown terminal striæ.

Expanse 32 millim.

Type in Coll. Staudinger.

*Hab.* ARMENIA, Zeitun.

(74a.) * *Pyrausta russulatalis*, n. sp.

Yellow-brown; palpi whitish at base; abdomen with slight segmental white lines. Forewing with an obscure dentate sub-basal whitish line; a more prominent antemedial line dentate outwards on subcostal and median nervures and submedian fold; a darker brown discoidal spot; a minutely dentate dark postmedial line defined on inner side by slight pale patches and on outside by a whitish line, slightly angled outwards below costa, then curved to vein 2 where it is angled inwards; traces of a pale subterminal line; a terminal

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series of whitish points. Hindwing rather paler towards base; a very indistinct curved dark postmedial line with pale patch beyond it at vein 2; cilia pale with a brown line near base. The pale markings of forewing are often rather indistinct giving a more uniform appearance.

Expanse 26 millim.

Type in Coll. Staudinger.

*Hab.* CENTRAL ASIA, Schakuh, Scharud; TURKESTAN, Namangan.

(100a.) * *Pyrausta catilualis*, n. sp.

♂ Head and thorax dull reddish-brown; palpi white below; abdomen brown, the segments fringed with white. Forewing dull reddish-brown; faint traces of a waved antemedial line with paler points on it; a prominent pale point in end of cell; the postmedial line indistinct, obliquely curved and minutely dentate from costa to vein 3 where it is retracted to lower angle of cell, then sinuous, two pale points beyond it below costa, slight points between veins 3 and 5, a point in its sinus and one in submedian fold. Hindwing pale suffused and irrorated with dull reddish-brown; a discoidal point; the postmedial line defined by whitish on outer side and strongly bent outwards between veins 5 and 3; cilia pale brown with darker bases.

Expanse 28 millim.

Type in Coll. Staudinger.

*Hab.* ALGERIA, Lambessa.

(3a.) *Tegostoma paralis*, n. sp.

Grey-brown; palpi below, sides of frons, pectus, legs, and ventral surface of abdomen white. Forewing more or less clouded with dark brown, especially on basal inner area and near end of cell; traces of a waved oblique antemedial line with a point beyond it in cell; a prominent oblique dark discoidal bar; a minutely waved black subterminal line, slightly curved from costa to vein 3, then very slightly incurved; a diffused line just inside termen darker towards costa and inner margin; a fine black terminal line, and slight line through the cilia. Hindwing more ochreous-brown; a curved subterminal line from costa to submedian fold, the area beyond it fuscous down to vein 3; cilia whitish, fuscous at base.

Expanse 20–22 millim.

*Hab.* TURKESTAN, Namangan.

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Closely allied to *T. disparalis*, from which it differs in the postmedial line being much darker and more evenly curved.

(4a.) *Tegostoma albizonalis*, n. sp.

♂ Frons with a pointed corneous spine slightly excised in front with conical prominence above it somewhat excised at apex.

Head, thorax and abdomen olive-brown and white above, white below. Forewing olive-brown; the base white; antemedial and medial white bands with irregularly dentate edges, the former bent outwards to inner margin, the latter emitting an acute tooth on outer side at median nervure; a postmedial patch from costa to vein 4 with dentate edges, a spot on inner margin, one on costa towards apex and a subterminal spot between veins 2 and 3 sometimes almost conjoined to the postmedial patch; a terminal series of small spots; cilia white, brownish at base. Hindwing fuscous; cilia white-brownish at base.

Expanse 24 millim.

Type in Coll. Staudinger.

*Hab.* ARMENIA, Askhabad; CENTRAL ASIA, Kara Sagin.

(13a.) * *Noctuelia anæmicalis*, n. sp.

♀ Head, thorax and abdomen white tinged in parts with ochreous. Forewing brownish-ochreous mixed with long white scales; the costal edge white; a white streak in submedian fold; an obliquely-curved white line from costa before apex to middle of inner margin; cilia white, ochreous at base; the apex produced and acute, the termen oblique. Hindwing white suffused with fuscous; cilia white at tips; the undersurface white.

Expanse 18 millim.

Type in Coll. Staudinger.

*Hab.* ALGERIA, Biskra.

(17a.) * *Noctuelia arcuatalis*, n. sp. (Plate III, fig. 28.)

Head, thorax and abdomen white tinged in parts with pale olive-brown. Forewing white suffused with pale olive-brown leaving white streaks in base of cell and submedian fold; a curved brown line with white band on its inner side from below costa to inner margin; a white discoidal spot; a brown postmedial line with white band on its inner side except at costa where it crosses to the outer, curved from costa to vein 3, then oblique and slightly sinuous, and

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with a white spot beyond it on inner margin; a subterminal white band not reaching costa on inner margin; cilia white at base, brown at tips. Hindwing white tinged with pale olive-brown especially towards termen; a curved minutely dentate postmedial line; a fine brown terminal line and line near base of cilia.

Expanse 22–24 millim.

*Hab.* CENTRAL ASIA, Margellan, Samarkand.

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## EXPLANATION OF PLATE III.

[*See Explanation facing the* PLATE.]

JULY 14, 1900.

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# VIII. *Note on the habits and structure of* Acanthopsyche opacella, H.-Sch. By T. A. Chapman, M.D., F.Z.S.

[Read June 6th, 1900.]

## Plate VIII.

Having found *Acanthopsyche opacella* this spring rather freely at Locarno, I took the opportunity of noting some items about it that have not hitherto been much examined. I may note, in the first place, that the species occurs everywhere at Locarno up to a height of at least 1500 feet above the lake, generally however very sparingly. It is most common in the lower cultivated grounds, especially amongst the vineyards, which consist here of long rows of vines, trained on maple or other trees, with wide spaces between the rows. These spaces are sometimes cultivated, sometimes left for some years in grass. I believe it is these grassed areas that suit *opacella*, as the cases may be found near them on tree trunks, and especially on the stone posts that flank the roadside, when the road passes through such an area. It appears to emerge chiefly in April, but earlier or later according to season, with some individuals much earlier and later, spreading the period of its emergence over at least two months.

On April 18 I happened to find a male *opacella* just emerged, at about 4 P.M. Emergence takes place between 1 and 5 P.M. On opening the box again a minute afterwards I found he had paired with a female that was in the same box. His attitude was much the same as that of *Standfussia tenella* and other Psyches when paired, one that is common I imagine to all the Psyches—viz. buried in the female sac so that its mouth presses against the bases of the hind wings, the thorax bent forwards and the wings slightly spread and very much deflexed so as to cover the mouth of the sac. He allowed me to raise his wings without being disturbed, and I could see the first two pairs of legs stretched downwards in front of the moth and sac; the hind pair I could not see. I killed the moth suddenly by applying a drop of chloroform. He never stirred or loosened a claw, so that he now remains



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in the actual attitude that is normal in every respect except that the wings are raised to show the position of the body and legs. The condensation of the fur by the chloroform has made the position of the third pair of legs quite visible. It is not the case, as I suspected from an imperfect observation last year, that the third pair of legs enters the sac, at least not tarsi first, but they enter it trochanters first, and so far, that the edge of the mouth of the sac is in the angle behind the knee, if we may so call the femoro-tibial articulation. The tibiæ and tarsi are closely appressed to the outside of the sac, parallel with its long axis, and are so small and buried amongst the materials clothing the sac, that though quite visible are not at all evident till carefully looked for.

They could not be appressed to the case as they are if the tibiæ possessed spines as in the lower Psychids. I had afterwards some further opportunities of observing pairing in *A. opacella*. The means by which the male manages to insert the abdomen into the case of the female, and reach the further end of the interior of the pupa case have, I think, never been explained. In the female ovipositor, the extensile segments, whether used for piercing plant tissues as in the Eriocraniids and Adelids, or to reach a distant point for oviposition, as illustrated especially in the Talæporiads and Fumeids, are manipulated by a special arrangement of rods with intrinsic muscles. In some Talæporiads these rods are equal in length to the whole abdomen, and indeed when at rest these anterior extremities reach not only the thorax but the head of the insect. In these ♂ Psyches—my observations refer at present of course to *opacella*—there is no arrangement of this sort, no structure in fact that does not exist in the abdomen of almost any other Lepidopteron.

I saw several specimens pairing, and noted that the basal segments of the abdomen whilst still outside the case, were inflated with air, so that the limp intersegmental membrane being stretched gave quite a solid basis and connection of parts. A specimen suddenly killed, and examined at once by opening the female sac, was seen to have the segments intervening between the mouth of the sac and the pupal case inflated in this way. Those inside the pupa case and extending to its base, quite visible through the nearly transparent pupa shell, were not

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inflated in the sense of being swollen and rotund, but appeared to be so, so far as pressure between the female and her pupal shell allowed.

The mechanism by which this inflation occurs I have never determined, but it is doubtless a special modification of that possessed by many insects and especially Lepidoptera, by which the abdomen is inflated at the period of emergence from the pupa.

The female of *A. opacella* in perfect condition is a very different creature from my previous idea of it, or what one can gather from any published descriptions I have seen except the notes by Dr. Max Standfuss.

As usually seen and described it is a naked white maggot, with some dark shining head and thoracic plates, some almost recognisable mouth parts and rudimentary true legs. Otherwise it is a mere egg bag. Barrett tells us it has "small tufts of erect soft white hairs at the sides of the seventh to ninth segments." The genuine animal has however a much more elaborate clothing than this, the difficulty is to obtain it with this still *in situ.*

My first note is as follows,—"a ♀ of *opacella* in good condition, I noticed that the wool with which she lines the mouth of the sac and partially disposes amongst the eggs, arises in five or six tufts placed on each side of certain abdominal segments. I meant to make closer observations later, but when I came to do so, she had rubbed the wool off, and I have not again succeeded in finding a ♀ with the wool perfect, she begins to rub it off in her first journey to open the mouth of the sac, and though keeping a sharp eye for sacs at this stage, I have so far always found the ♀ already denuded and the wool loose in the mouth of the sac and of the pupal shell."

The ♂ larva increases the length of the funnel at the open end of the sac, which serves to hold the pupa whilst he emerges, and which consists of little else than silk without any covering of chips of bark, wood, etc., but he makes no other addition to the sac. The ♀, on the other hand, may repair and trim up the mouth of the sac, but practically leaves it of its larval size and structure; but within this, she closes the mouth of the sac by spinning a quantity of silk as a loose network, so that it forms a sort of cocoon, in front of and in some extent fitting the anterior of the pupa, between it and the mouth of the sac. In *opacella* this spinning does not extend backward, but in

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some exotic Œketicids with large roomy sacs, it extends all round the pupa, forming a loose hammock inside the sac, in which it rests. We are concerned however just now with *opacella*. This silk must have a somewhat valvular arrangement as the moth forces her way through it, to protrude the thoracic segments from the sac, and on retiring the silk largely closes together again. One such journey results in great damage to her growth of silky wool, which is entangled in the mouth of the pupa case, amongst this silk and in the open mouth of the sac.

It occurred to me that the only way to find a specimen with this clothing of wool complete would be to find a specimen still unemerged from the pupa, though thoroughly mature, and to carefully remove the pupa case.

This is not quite so easily done as said; I succeeded, however, in several instances, with very little damage to the specimens.

A specimen so obtained, presents six abdominal segments, with rings of white, silvery or silken hairs or wool, encircling them more or less completely except dorsally.

The first abdominal segment is a narrow one and has no clothing. The next six segments, second, third, fourth, fifth, sixth and seventh, have each a ring of wool clothing the whole segment, with the exception of a narrow break dorsally. The wool arises from the whole segment, as we usually understand a segment, but each ring of wool is separated from the next by the naked area formed by the expanded intersegmental membranes. The hairs are a little denser on each side of the ventral line, again above this, and again beneath the spiracles, but hardly enough so to entitle these to be called tufts. The hairs are waved, and though not perfectly white, have a very white silvery silken look against the yellower tint of the insect itself.

The interior silken net of female sac, when it becomes a cocoon, has several uses. The female pupa does not leave the sac; but more than this it has to be kept in its place during the several journeys to and fro that the moth makes from it to the mouth of the sac and back, and also during the access of the male. In *A. opacella* it accomplishes this by fitting the front of the pupa case, and also by some of its meshes being caught and entangled on the projections that the appendages, aborted mouth parts, legs, etc. present. It thus acts as a cremaster both before and after the emergence of the moth, preventing the

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pupal case being shoved back on the retreat of the moth into it.

The larval sac is a tube along which the larva and male pupa can travel to and fro with facility, so could the female pupa were it not fixed in this way and by the exserted intersegmental dorsal spines. But the female moth is in a different position, the tube along which it has to travel is not the larval sac posteriorly, but the empty pupa case; anteriorly the larval sac does not correspond with this, but is of course considerably larger just at the anterior end of the pupa. The silken mesh or hammock (partial) we are considering, just bridges over this space, and so proves a guide to the female in her retreat to the pupa case, preventing her from missing the opening, which otherwise she would be tolerably certain to do, as well as preventing her pushing it back behind her instead of entering it. It would be still more impossible for the male moth to find this opening, even assuming, as is probable, that he keeps more or less in touch with the female whilst she retires; that he does not always so keep in touch is also however probable, as pairing takes place, even when the female is not at the opening of the sac on the arrival of the male.

This silk mesh must have a definite valvular structure, admitting of the moths finding an easy tubular road through it, and yet closing up when they are not using it. It must therefore of itself present some valuable protection against the entry of enemies, against which the moth first, and afterwards for some weeks her eggs, require protection. It is probably largely in aid of this function that the structure is so effectual in rubbing off the woollen clothing of the moth. So effectual is it that in a very short time, a moth having made a few journeys through it to and fro, becomes quite denuded and presents the usual appearance of a bare maggot. The great mass of the hair remains in this position, that which escapes from the mouth of the sac and that that gets distributed amongst the eggs, being trivial in amount and apparently accidental.

In some large exotic species a large mass of these hairs occurs at this position, and even in *A. opacella* the amount is very considerable, much greater when teased up than it appeared when dispersed in orderly fashion on the moth. On first opening a female case containing eggs it is rather difficult to distinguish this hair from the silken net that

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holds it; one appreciates what an admirable protection it must afford against small marauders of all sorts, but wonders a little how the moth herself passed so easily through it to and fro, and yet left the wool so admirably disposed as it is, since her last act is to leave the sac, by passing through this obstacle.

The female moth does not always drop out of her sac if unfertilised, but often dies within it. But if all goes well she always does so, as soon as she has laid all her eggs. If found immediately, one is surprised to observe that she has diminished in bulk to a very trifling degree. It is easy to see that the bulk is obtained by the inflation of the abdominal cavity with air. The use of this arrangement, as in some of the lower Psychids which have a precisely similar habit, one may safely conclude to be to prevent collapse to a state of absolute flaccidity, when muscular action would be impossible owing to the approximation of all the parts rendering further movement impossible, yet muscular action is absolutely necessary to complete the egg-laying and the emergence of the effete moth from the sac. The falling out of the moth is probably a provision to admit of the elastic silk structure in the throat of the sac to close, a closure completed by the wool off the moth entangled with it, making it impervious to any enemy unacquainted with its valvular arrangement.

If the moth died amongst the silk she would not only hold it open but herself form an edible highway to various enemies.

In special connection with the Psychids, some questions as to homologies of the neuration in various Lepidoptera have forced themselves on my attention, and I was glad to be able to examine some specimens of *A. opacella*, to get a little light on the matter.

There are in Lepidoptera four internal veins in the fore wings of all pupæ I have so far examined. Of these the first is not truly an internal vein, but is a branch of the cubitus. It has however been for so long called an internal vein (1c of Meyrick and Hampson, 1st anal of Comstock) that I fear it must continue to be so named, it is however given off at the base of the cubitus (the main vein giving rise to 2 and 3 of Meyrick and Hampson).

The three other internal veins arise by a common stem quite separately from the cubitus. The first of these (1b of Meyrick, 2nd anal of Comstock) is the one that is so

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persistent, and always reaches the margin of the wing. The third or inner one, though very constant and well within the wing area at an early stage, soon becomes quite a marginal vein, and does not so far as I know leave any trace in the imaginal wing. The second or intermediate one (1a of Meyrick and Hampson, 3rd anal of Comstock) may or may not persist in the imago, it usually joins the first near the base, and there are very few exceptions (if any) to the rule that it never reaches the margin of the wing. In *Psyche* this vein joins the 2nd anal (1b) in the manner that is so very usual, but further on appears to leave it again and proceed to the inner margin, forming one of the exceptions I have alluded to where this vein does not follow the rule of failing to reach the margin.

In the case of *A. opacella*, I have succeeded in examining the pupal wing at a suitable late stage, when the relationship of the primary pupal tracheæ to the imaginal veins is obvious. In these examples the trachea of the 3rd anal (1a) is short and occupies the position of the lower loop of the bifurcation, without quite reaching the 2nd anal (1c). At about this point the 2nd anal trachea divides into two stems which keep together for a short distance and then one goes on in the normal course of that vein, the other proceeds more directly to the inner margin, forming the inner vein so characteristic of the Psychids. The important point is that this vein is not a continuation of the 3rd anal (1a) after coalescing for a time with the 2nd (1b), but is a new development of that vein. It clears away this one apparent exception to the rule that the 3rd anal never reaches the wing margin. In the Œketicids there are several veins in this position, two, three, or even more, though it is clear these could not all be a simple continuation of the 3rd anal (1a); this observation on *A. opacella* renders it tolerably certain that they are all fresh developments of the 2nd anal. A small tracheal twig from the 2nd anal marks the place of anastomosis with the 1st anal (1c).

As regards the hindwings *A. opacella* presents nothing having a very wide significance. But its special place in the scheme of evolution of the anterior veins of the hindwing are possibly important. My few observations on these appear to suggest that the primary frenate subcosta (8 of Meyrick and Hampson) was formed by the union of the true subcostal vein, with the first branch of the radius

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$R_1$, and that these two tracheæ passed together to the termen of the wing and formed the basis of vein 8 (Meyrick). Since vein $R_1$ originated at some distance from the base of the wing, the position where the two veins joined was marked by a transverse vein, the bar between 8 and the cell present in many families.

The further progress of this condition took two directions, or rather had two elements. The first was a tendency of the bar to travel to the base of the wing. The extreme of this condition is found in Papilionids, Vanessids and Pierids, possibly in all butterflies, but I have not yet examined skippers or Lycœnids, in which vein 8 possesses both tracheæ from the base of the wing to the termen.

The other change was for one or other trachea to atrophy beyond the bar. In *Sphinx* $R_1$ disappeared until only sufficient remains to form the bar.

In *Polyplocidæ* both changes took place, vein 8 is entirely $R_1$, originating close to the wing base, and the subcostal is only a minute trachea almost lost in the wing base.

In *A. opacella* the condition present is an atrophy of the subcostal beyond the bar, the vein 8 up to the bar is subcostal, beyond it $R_1$. In this respect it agrees with the few Caradrinids I have examined.

## Plate VIII.

[*See explanation facing the* Plate.]

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# IX. *Life Histories in the Hepialid Group of* Lepidoptera, *with Description of one New Species, and Notes on Imaginal Structure.* By AMBROSE QUAIL, F.E.S.

[Read June 6th, 1900.]

PLATES V and VI.

IN the following paper I have given the result of my special work for the past two or three years, on the Hepialid group of Lepidoptera. It comprises a complete life history of *Porina cervinata*, Walk., a contribution to the life histories of *P. umbraculata*, Gn., and *Charagia virescens*, Dbld., a description of one new species, and notes on imaginal structure in several species.

1. Life history of *Porina cervinata*, Walk., of New Zealand—

| | | | | |
|---|---|---|---|---|
| *Ovæ:* deposited | Oct. 21, 1899, | hatched | Nov. 19, 1899 | = 29 days. |
| „ | Oct. 25, 1899, | „ | Nov. 24, 1899 | = 30 „ |
| „ | Dec. 10, 1899, | „ | Jan. 1, 1900 | = 22 „ |
| „ | Jan. 28, 1900, | „ | Feb. 18, 1900 | = 21 „ |

Ovæ deposited on succeeding nights by the same females, larvæ hatch out on succeeding days, sometimes extending to one week; the above dates are the first day deposited and the first day of hatching. Sequence in colour change is cream when laid, then drab (grey), and finally black in less than ten hours. They are smooth and polished and opaque from the time they are laid to the time of emergence. It is seldom the ovæ form a complete circular outline.

*Larva newly hatched.* (Pl. V, figs. 11, 12, 13, 14.)

Head is pale brown, rest of larva creamy white. Head exceptionally large, fully the length of any two other segments, whole larva fairly robust. Each lobe has about twelve hairs, nine of which form a margin round the lobe. Ocelli large, mahogany coloured. Antennæ terminated by three slender processes. Suture of lobes and clypeus is very distinct; on each side of clypeus are three hairs, equidistant and almost parallel with sutures; in front of



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clypeus are two hairs. Outer palpi of maxillæ terminated by a long slender joint; inner palpus terminates with two very slender separate processes. Mandibles serrate. Labium, at either side has a small slender organ (palpus ?) towards apex, and is terminated by the spinneret.

Viewed laterally the prothoracic dorsum is deeply striate transversely; outline of scutellum is indefinite; on dorsal anterior edge there is a transverse series of hairs. Two tubercles (each with one hair) are above the locality of the spiracle, which is large on the posterior area of segment near the probable edge of scutellum; immediately above the spiracle is a tubercle. Above the legs on a lateral swelling are two remote hairs. The meso- and meta-thoracic segments have no dorsal plate, the anterior and post trapezoidal tubercles are normal with those of the abdominal segments; below the trapezoidals four tubercles (one hair each) are alternately anterior and posterior. There are six tubercles on either side of the meso- and meta-thoracic segments. The thoracic legs have hairs at or above the joints. The segmental area of prothorax and all other segments is covered with a dense coat of minute hairs, which are most numerous on the dorsum; they are all over the thoracic segments, but seem to be only dorsal on the abdominal segments. I examined many batches of newly hatched larvæ of this species, and this growth of minute hairs was always present. The larvæ of some broods appear to be more robust than others; in some the prothoracic spiracle was more distinct than in others, of one or two specimens I got a good view of the thoracic intersegmental membrane, and amongst the minute hairs were three rather larger hairs, subdorsal remote and separate, probably homologous with the intersegmental subdorsal tubercles of more adult larvæ.

All the tubercles of the abdominal segments have a single seta, except the supraspiracular tubercle, which has two setæ. The anterior trapezoidal tubercles are dorsal and close, the post trapezoidal tubercles dorsal and remote. The two supraspiracular setæ rise from a common lateral area,—the small anterior hair is very difficult to distinguish at first—on which are the spiracle in an anterior position below the supraspiracular setæ, and the subspiracular tubercles (two) below the spiracle. Abdominal segments 3, 4, 5, 6 have three separate setæ at the base of

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the abdominal feet (prolegs). The tubercles of ninth abdominal segment are six in number (viewed laterally), namely one anterior dorsal, and five on the posterior edge of the segment, arranged one below another, all have only one seta. The anal segment has five setæ viewed laterally, but in all ten arranged thus: six above the anal fold, and four below it. Viewed ventrally, at the base of each thoracic leg there is a small hair, and on the inner side of the abdominal feet a corresponding hair, the latter (abdominal feet) are terminated by (apparently) a single row of weak hooks.

The tubercle setæ are apparently quite smooth.

*Larva* 51 *days old.*

Very slender in proportion to length, which is $\frac{3}{8}$ inch. Pale brown head, dark prothoracic dorsum, pale cream segmental area. The dorsum of prothorax is covered by scutellum, which extends to about the middle of the lateral area. Viewed laterally there is an anterior marginal series of hairs on scutellum, four equidistant and a closer fifth; a second transverse series is central with three equidistant and a fourth inner hair, the basal area of these is not enlarged. Spiracle is large, transverse, posterior; below the spiracle is a large anterior tubercle bearing two remote setæ. The pro-meso intersegmental membrane has three single subdorsal hairs. Meso-thorax has anterior trapezoidal tubercles coalesced dorsally, and a posterior dorso-lateral plate enclosing the posterior trapezoidal and three lateral tubercles, which form a marginal series resembling that of the prothoracic scutellum; anterior is a small lateral tubercle with one hair, a lower posterior tubercle with one seta, and a large tubercle with one seta, above the legs. The meso-meta intersegmental membrane has three subdorsal hairs. Metathorax has the ante-trapezoidal tubercles separate at the median line, but they are elongate laterally, the post-trapezoidal is normal in position but rather large. Supra-spiracular tubercle very large with two setæ, a small anterior lateral tubercle with one hair; a lower tubercle with one seta, a posterior tubercle, and one above the leg, each with one seta.

The abdominal segments have tubercles corresponding with those of the newly hatched larva except on the first abdominal; the subspiracular tubercles are coalesced; on

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remaining segments they are separate; and there is an additional tubercle with one seta above the base, and also a fourth hair on the base of the abdominal feet. There is also an additional subdorsal tubercle with one seta on the ninth abdominal segment: this may indicate the morphological character of the two supra-spiracular setæ, viz. really two separate tubercles which have coalesced. The subventral tubercles have two setæ.

Ventrally, the abdominal feet have several rows of rather weak hooks which form a complete terminal margin, the claspers have several rows of weak hooks on inner side only.

The skin is covered with fine hair. The tubercle setæ have minute thorns.

*Larva* 86 *days old.*

Not quite so slender, length about ¾ inch. I noted the spinneret is long and slender; and that ventrally anterior to each prothoracic leg there is a single hair, which is not duplicated on the meso- and meta-thorax. The distribution of hairs on the ventral surface is, one hair near base of each leg on the posterior margin of the thoracic segments; abdominal segments 1 and 2 correspond, the hairs being inner to the two sub-lateral tubercles. 3, 4, 5, 6 have the hairs on inner side of the abdominal feet. 7-10 have corresponding hairs.

I noted also that the middle and the inner hairs of the second series of the prothoracic scutellum have a large circular black area around the base of each.

*Larva* 93 *days old.*

I note the anal segment viewed laterally has one dorsal tubercle, one anterior subdorsal, one posterior subdorsal, above the anal orifice, three similarly situated below the anal orifice, and four setæ on base of claspers, one of which is anterior and above the other three. The terminal hooks of abdominal feet are numerous and form a complete margin, the terminal hooks of claspers are strong on inner margin, but weak posteriorly.

*Larva* 135 *days old.* (Pl. V, figs. 14, 15, 16.)

Considerably more robust, length from ¾ to 1 inch. The larvæ appear to increase rapidly in length in their early days, and subsequently increase more in bulk, and

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slowly in length. Shape is cylindrical, posterior segments slightly smaller than anterior. Prothorax slightly smaller than meso-thorax. Trapezoidal tubercles of eighth abdominal are equidistant, of ninth the anterior are remote, and the posterior close together. The supraspiracular tubercles are on conspicuous lateral swellings.

Head reddish brown; dorsal plates, tubercles, setæ, and spiracles are brown; legs pale brown; segmental area cream colour, varying to oiley white; abdominal feet white. I suspect the colour bears some relation to the ecdysis. One larva, having just completed its ecdysis, was entirely cream colour except the hairs, but in the course of a few hours became normal, and the skin oiley; the contents of the alimentary canal give a slight greenish tint to all but the last two or three segments.

*Larva* 195 *days old.* (Pl. V, fig. 17.)

Length 1⅜ inches. I figured prothorax showing dark areas at base of the hairs of second series. I observed one larva on the verge of ecdysis, the caput already split; under the microscope the setæ of tubercles of inner skin showed through the outer skin the trapezoidal setæ directed towards each other across dorsum, the long supraspiracular seta just reached the base of the anterior trapezoidal, the short seta obliquely crossed the long one.

*Larva* 226 *days old.* (Pl. V, figs. 18, 19.)

Length about 1½ inches. Larvæ exude a dark fluid when handled, apparently from the mouth; I had not previously observed these larvæ to do so. I examined and figured the abdominal feet. A row of strong hooks turned outward completely encircle the inner edge of a central transverse elongate depression, about six rows of sharp points (or spines) surround the inner row of principal hooks. The claspers have strong hooks on inner side, and numerous small spines, which become weaker towards, and are not present at, the middle of the posterior margin, the outline of which forms a central incision.

*Larva* 239 *days old.*

A freshly-cast skin examined under the microscope showed the small secondary hairs on some portions. The rims round base of setæ were transparent, the rest of the skin not being so. Setæ of tubercles smooth.

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*Larva* 320 *days old, pupated.*

Previous to pupation the meso-thorax became much enlarged dorsally and laterally, but I could perceive no further alteration from previous descriptions.

*Pupa.* (Figs. 20, 21.)

Length about 1¼ inches. Dark straw colour with reddish spines. Lateral aspect: Head small, each succeeding segment gradually wider to 7th abdominal. 8, 9, 10 form a rounded extremity.

Ventral aspect: Eyes prominent, elevated. Antennæ short, extending very little beyond base of wing cases. Second pair of legs form margin of wing cases, first pair of legs inner to second, tips of third pair between apices of wing cases. Abdominal segments 2 and 3 are coalesced on the ventral surface, the wing cases extend to anterior edge of same. On 4 and 5, in the position of abdominal feet of larva, are some minute probably inoperative spines. On 7 a strongly developed anterior ridge of spines. 8, 9, 10 are smooth on ventral surface.

Dorsum. Part of head constitutes anterior extremity of pupa. Prothorax small, with anterior margin of hairs corresponding with those of scutellum of larva. Meso-thorax very large with wing cases attached, trapezoidals as on larva. Meta-thorax small, terminating laterally with edge of fore-wing cases—which completely cover hind-wing cases at base. Abdominal 1 is so small as to look as though squeezed by meta-thorax and 2nd; the latter has trapezoidals, supraspiracular and subspiracular setæ as on larva, the spiracle is wholly above wing-cases.

Abdominal 4, 5, 6 have also the four abdominal-feet-basal setæ in addition to the trapezoidals, supraspiracular and subspiracular setæ, all of which are well developed; 4, 5, 6 also have the ventral inner setæ.

Abdominal 2 to 6 have spiracles. 7 has only a spiracle scar, and only two setæ in position of larval subventral setæ. 8 has only a spiracle scar and one subventral seta. I cannot identify setæ on 9 and 10.

Abdominal 3 has anterior and posterior dorsal spines, each succeeding segment has three spines extending sub-laterally, but strongest on dorsum. 8 has only a few dorsal spines, but very much stronger than those on the other segments: these probably operate in conjunction with the

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strong ventral spines of 7. The posterior extremity of pupa has four spines.

Only a small portion of the hind-wing cases show beyond the fore-wing cases at the outer margin.

*Duration of pupal stage about* 20 *days.*

Imago described by E. Meyrick in "Trans. New Zealand Institute," vol. xxii, with synonymy. I have found this an exceedingly variable species in respect to colour, markings, and structure of wing scales; in its variability there is enough material for the formation of several species, if only the necessary environmental conditions were to happen. Bearing this in mind, it is interesting to note that Mr. Meyrick says "the fuscous forms are sometimes very similar in colouring to *P. despecta*, but they are distinctly shorter winged, and the compound discal spots appear to be a good persistent character." From material received from South Island, and collected by myself in the North Island, I doubt the specific rank of *P. despecta.* Having obtained ovæ which hatched from a specimen which I believed to be *P. despecta* (larva described "Entom. Record," vol. xi, p. 340, under misprint name *Gorina despecta*), I fail to observe any difference between them and the larvæ of undoubted *Porina cervinata.*

2. Contribution to the life history of *Porina umbraculata*, Gn.—

*Ovæ:* deposited Dec. 2, 1899, hatched Dec. 27, 1899 = 25 days.
„ Nov. 10, 1899, „ „ 6, 1899 = 26 days.

Spherical, cream when laid, black in a few hours, polished, opaque; indistinguishable from the ovæ of *Porina cervinata.*

*Larva newly hatched.*

Rather larger and more robust than *P. cervinata*, slightly greenish in colour. I examined several broods, and always found the skin quite smooth, whereas *P. cervinata* has a growth of minute hairs all over the skin; nor could I distinguish on *P. umbraculata* the subdorsal intersegmental thoracic hairs. In all other respects, the head, antennæ, ocelli, maxillæ, labium, palpi, spinneret, the number and position of the thoracic and abdominal tubercles, are identical with those of *P. cervinata.* I

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especially noted the identity of the three separate setæ at base of abdominal feet, and the position of the tubercles on 9th and 10th abdominal segments.

*Larva* 18 *days old.*

Length $\frac{1}{12}$ inch, very slender in proportion to length. Pale cream colour, head pale brown. As regards the number and position of tubercles on the thoracic and abdominal segments; these correspond with *P. cervinata* at fifty-one days old, except that the subspiracular tubercles of first abdominal segment are not coalesced. It may be worth while to point out that the anterior dorsal tubercles of the meta-thorax are anterior to the supraspiracular tubercle, whereas on the abdominal segments the anterior trapezoidal tubercles are above the supraspiracular in position.

The hooks of the abdominal feet appear to be one strong inner row, and one outer row of minute points (or spines). Four separate hairs at base of abdominal feet. The entire skin is covered with minute pimples, but I cannot detect hairs as on the skin of *P. cervinata.* The tubercle setæ are minutely thorny.

*Larva* 39 *days old.*

Length $\frac{1}{2}$ inch. Head pale mahogany brown. Eighth abdominal segment pale, all other segments dark, of a rather greenish shade.

Subspiracular tubercles of first abdominal segment are not coalesced. Cannot detect hairs on the "pimples" which cover the skin. Abdominal feet have a strong inner row of hooks, and several rows of minute spines. Claspers incomplete posterior terminal margin.

*Larva* 81 *days old.*

Length $\frac{3}{4}$ inch. Colour dark oiley greenish. Coalesced subspiracular tubercles on first abdominal segment. Cannot detect hairs on the "pimples." Claspers incomplete, marginal hooks posterior. Setæ thorny.

Imago labelled *Elhamma signata,* Walk., var. *umbraculata,* Gn., in the British Museum collection. Described by E. Meyrick, "Trans. New Zealand Institute," vol. xxii, with synonymy, as *P. umbraculata.* I am convinced that *P. umbraculata* and *P. signata* are specifically distinct, and have noted a difference in the scale structure of the

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wings. The time of appearance of imagines is different, there being a full month's interval. I have a note that in 1899 I obtained ovæ of *P. signata*, but failed to rear the larvæ. In 1900 I obtained a number of female *P. signata*, but none deposited ovæ, whereas I experienced no difficulty in obtaining ovæ from *P. umbraculata*.

3. Contribution to the life history of *Charagia virescens*, Dbld.

*Larva about three months old.*

I have been unable to obtain the ovæ of very young larvæ; this species lives at least two years—possibly three, but I think the former.

Length $\frac{11}{16}$ inch. Straw colour, head reddish yellow.

Viewed laterally: Head, with serrated jaws. Spinneret long and fine. Ocelli in two parallel rows of three each. Antennæ, with broad basal joint, narrow second joint, shorter third emitting a bristle and three slender processes.

Prothorax: anterior series of hairs on scutellum, as in *Porina*; a mid-lateral black concavity on scutellum, enclosing three hairs, the middle hair being strongest; below is a single hair on scutellum lateral edge: these represent the second series of hairs on *Porina*. The spiracle is posterior, below the scutellum; an anterior tubercle with two hairs above the legs.

Meso- and meta-thorax: anterior trapezoidals on anterior subsegment. Posterior trapezoidals more remote, single setæ stronger than the setæ of anterior trapezoidals, on principal subsegment; below, but on same swollen area, are two setæ, and posterior to the lowest is a small tubercle with one hair, these approximate to the anterior series of prothoracic scutellum; also a small tubercle with one hair anterior to the principal subsegment, above the legs are an anterior and posterior swelling with one seta each, and two setæ above base of legs. Intersegmental membranes of thorax have one subdorsal hair. The thoracic legs have hairs at or above the joints.

This specimen had a remarkable abnormal tubercle on one side only of the first abdominal segment, this had two perfectly formed anterior trapezoidals each with one seta, situate one below the other; on the opposite side of the larva the anterior trapezoidal tubercle was normal, with one seta; posterior trapezoidals normal in position,



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with one seta located on small posterior subsegment. Below the antetrapezoidal the supraspiracular tubercle has one long, one short, seta. The spiracle is below the supraspiracular tubercle—not on *edge* of intersegmental membrane as in adult larva; posterior to the spiracle are remote subspiracular setæ; below spiracle is an anterior swelling with one seta; a subventral swelling with two setæ. Abdominal 2 as 1 without the abnormal anterior trapezoidal tubercle. 3, 4, 5, 6 have four hairs at base of abdominal feet. 7, 8 as 2. 9 has two dorsal tubercles, two subdorsal each with one seta, but the seta of one subdorsal tubercle is long, that of the other is short. On posterior edge of 9 are two lateral tubercles with one seta each, and a subventral tubercle with two setæ.

Abdominal feet have terminal hooks incomplete on outer side, otherwise as in adult. Claspers have terminal hooks only on inner side.

Tubercle hairs have minute thorns. Skin covered with minute pimples not so distinct as on *P. umbraculata.*

Figs. 13 and 14, Pl. V, are from a larva, probably half-grown, described in a paper published in "Proc. Roy. Soc. Queensland," vol. xv, with illustrations; length $1\frac{1}{4}$ inches. A second larva about half-grown, length $\frac{7}{8}$ inch, differs only in the colour being rather yellowish than red; I suspect the colour of the larvæ assimilates to the colour of sap-wood in which they live. I note the smaller specimen has spiracles distinctly on segment. I could not discover subdorsal intersegmental thoracic hairs. Black concavity of scutellum has two hairs, one very slender.

*Adult larva, length* $2\frac{5}{8}$ *inches.*

Subspiracular tubercles of first abdominal segment are not coalesced. Supraspiracular tubercles have one long, one short setæ. Spiracles are on anterior edge of segments if not actually on the intersegmental membrane. Tubercles of abdominal 9 as before described. Abdominal feet have two rows of terminal hooks which form a complete margin, stems of first row of hooks almost reach second row. Claspers have terminal hooks on inner side only.

Black concavity of prothoracic scutellum has one hair only. Tubercle setæ smooth.

Most larvæ have tubercles with definite area round the base of seta, but none of the larvæ of *C. virescens* have

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definite tubercle base, only occasionally a slight discoloured area round seta indicates the tubercle base, I have therefore used the general term swelling rather than tubercle in my descriptions of the species.

I have made notes on the pupa elsewhere. Imagines described by E. Meyrick, "Trans. New Zealand Institute," vol. xxii, with synonymy. It is the only species of *Charagia* in New Zealand.

4. My friend Mr. H. E. Bacot in 1899 sent me a parcel of *Hepialidæ* from S. Africa about one hundred specimens, comprising three or four species, at least one of which so far as I can learn is unnamed. For the purpose of this paper it is necessary to describe and name this species; the British Museum collection contains two other species of the genus awaiting description.

*Gorgopis bacotii*, sp. nov. (Pl. V, fig. 1.)

♂ 25 mm. Head greyish brown above, dark brown beneath. Thorax grey. Abdomen pale brown. Antennæ ferruginous, segments securiform. Legs of normal size, dark brown above, grey beneath. Fore-wings: a characteristic white band from base along lower side of cubitus to middle, curves from cubitus to apex of wing; area above the band is pale brown, greyish costal streak, brown line on extreme costal margin; below the band is edged with brown, the lower and outer area of wing greyish. Cilia brownish edged with grey. Hind-wings: concolorous pale brown, cilia as on fore-wings.

FLORIDA; SOUTH AFRICA.

Common. Markings constant, no variation in my series of eleven specimens.

5. Probably the genus *Hepialus* preserve among them more extensively than any other genus of the group, the structural character of primitive *Hepialidæ*, at least in the imago. It seems anomalous, however, that the present distribution of *Hepialus*—and subgenera—is so extensive and connected, ranging throughout Europe, Asia, Australasia, North and South America, but not in Africa; and yet species of more specialised genera are isolated and disconnected in distribution. *Porina* (*Elhamma*, Walk.), essentially an Australasian genus, has one representative—*P. niphadias*, Meyr.—in Patagonia; *Leto*, Hubn., a genus

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with only two species: *L. staceyi*, Scott, in Australia, and *L. venus*, Cram., in S. Africa; the reverse might be expected, namely, ancient genera disconnected, specialised genera (recent!) connected distribution. If entomologists able to do so would assist with material, I should be glad to work out these seeming anomalies by similar observations to those contained in my notes.

I take this opportunity of thanking those entomologists who already have kindly supplied me with material, especially Messrs. E. Anderson; G. Lyell, junr., of Victoria; R. Illidge of Queensland, and my friend Mr. Arthur Bacot of London, whose help has been invaluable to me.]

*Notes on Ovæ.*

Ovæ of European *Hepialus* are white, or nearly so, and afterwards bluish-black.

Ovæ of New Zealand *Porina* are cream when laid and afterwards black.

Ovæ of Australian *Charagia* are "pale yellow," and afterwards "slatey grey" (Illidge).

There is a colour difference between ovæ of *Hepialus* and of *Charagia*.

*Notes on Larvæ.*

The study of the habits of the larvæ is very difficult, as they are all either subterranean or internal wood feeders; it is probably due to this that very little is known about them. The Australian genera *Porina*, Walk., *Pielus*, Walk., *Oncopera*, Walk., *Hectomanes*, Meyr., *Trictena*, Meyr., are subterranean, *Charagia*, Walk., are internal wood feeders. Indian and Ceylonese genera: *Hepialiscus*, Hampson, subterranean, *Phassus*, Walk., internal wood feeders.

The newly-hatched larvæ of the genus *Porina* do not eat the empty egg-shell; they always attach a silk thread to the surface on which they walk, and by which they are able to drop as well as a geometrid larva. When young the larvæ are to be found just beneath the surface of the earth, about the base of grass stems; when older they burrow into the ground, constructing a frail "tube," the particles of earth being held together by silk. The "tubes" open at the surface of the ground—I have repeatedly tested this, by pulling up a piece of turf and looking through it—in no case have I observed a cover at the

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entrance of the "tube." The length varies to about six inches, and they are either vertical, oblique, or curved; obstacles probably determine the shape of the "tube," which is practically of the same circumference as the larva; a large cavity is constructed at the lower end (*P. cervinata*), within which the larva can curl up comfortably. I have never observed the larvæ feeding, but believe the pabulum to be green stuff above surface, not roots; I have removed green stuff (grass, etc.) as far as two inches below the surface from inside the "tube." I am inclined to think that during wet weather these larvæ are often drowned; on one occasion I found several larvæ killed by a white fungus, which formed a complete shroud round the dead larva.

The larva of *Hepialus lupulinus*, Linné, constructs a "long vertical tube" ("Entom. Record.," vol. iii, p. 124) like our New Zealand *Porinas;* this probably feeds above the surface; other *Hepialus*, however, are root feeders. I remember having dug roots of dock with numerous larvæ (*H. humuli*) sticking into them.

*Charagia* live in the wood of living trees. The burrows are commenced at an upward inclination and then vertically downward (*C. virescens*); the entrance is invariably covered by an operculum of silk—*Zeuzera* is an interesting parallel. Before pupation, the larva constructs a trap-door at the top of the vertical burrow—the only parallel known to me is the hinged covers of the trap-door spiders. Mr. R. Illidge, in his paper on the life history of the timber moths ("Proc. Roy. Soc. Queensland," vol. xiv), believes that the sap constitutes an important item of food; when the wood ceases to live the larvæ die. It may be remarked that the larvæ of *C. virescens* do a great deal of damage to the trees they frequent, not so much individually as collectively; in one extreme case, a section 6 feet long 3½ inches in diameter contained two old empty burrows, six inhabited by nearly full-fed larvæ, two about half-grown, and four small; usually, however, three or four burrows are contained in one tree-trunk. There is the difference in habits between European *Hepialus* (subterranean) and Australasian *Charagia* (wood feeders).

The period of larval existence varies from one to three years in the *Hepialidæ*. It is equally difficult to examine the structural characters of the larvæ in the case of wood feeders; the wood has to be split, at considerable risk

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of damage to larvæ. In the case of subterranean borers, though more easily examined, constant disturbance is the cause of great mortality among them. It is impossible to arrive at a knowledge of the number of moults during the larval existence.

It is perhaps unnecessary to note that the three thoracic segments have legs; abdominal segments 3, 4, 5, 6 have abdominal feet (prolegs), the anal segment 10 has claspers, the spiracles are situate on the prothorax, and 1st to 8th abdominal segments.

In newly-hatched larvæ there is a growth of minute hairs over the skin (*Porina cervinata*, fig. 1), and the absence of same (*P. umbraculata*). After the first ecdysis *Porina* and *Charagia* acquire an extra tubercle above the abdominal feet, and four setæ (instead of three) at base of same, and an extra subdorsal tubercle on the ninth abdominal segment. *Porinæ* have enlarged black areas around two separate setæ of the prothoracic scutellum (fig. 8), but *Charagia* (*virescens*) has three setæ of the second series contained in one enlarged black area. In *Porina* the abdominal feet have several rows of terminal hooks forming a complete margin, the terminal hooks of claspers being similar but incomplete at middle of posterior margin. *Charagia* has two rows of terminal hooks forming complete margin in adult larva, the claspers having two rows only on the inner margin, and the posterior margin being devoid of terminal hooks.

Having no available description of Hepialus larvæ, my friend Mr. Arthur Bacot made a description of an adult larva (probably *H. lupulinus*) and a sketch of the position of the tubercles; compared with *Charagia* (*virescens*) I find a distinct difference. *Hepialus* has the subspiracular tubercles of first abdominal segment coalesced—as in *Porina; Hepialus* has three setæ at base of abdominal feet—as in newly-hatched *Porina; Hepialus* has a subdorsal tubercle with two setæ on 9th abdominal segment (the supraspiracular in all *Hepialidæ* has two setæ on other abdominal segments), but on the 9th *Porina* and *Charagia* have two separate tubercles each with one hair.

The difference in structure between *Charagia* (*virescens*) and *Hepialus* (*lupulinus*?) may be specific only, but in conjunction with colour difference in ova, and the different habits of the larvæ, is interesting, and suggests generic distinction.

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*Notes on pupæ.*

My material is scanty; it comprises empty pupa cases of several species, and live pupa of *Porina cervinata.* In connection with the latter, the complete preservation of setæ in the exact number and position of the larval setæ is most interesting; it is probable that with pupæ of other *Hepialidæ,* the setæ are equally well represented, but during the operation of emergence or from other causes, they get broken, and though some are easily detected, it is usually not possible to detect all the (larval) setæ on empty pupa cases.

The antennal cases are always short, and are not fused to the pupal integument, so that on dehiscence they separate from it, and become detached with the headpiece from remainder of pupa case, leaving a hollow scar at the upper part of each of the second pair of legs. The tips of the third pair of legs are always between the apices of the wing cases. Only a small portion of the outer margin of hind-wing case projects beyond the fore-wing case in *Porina* (*cervinata,* fig. 21); a longer portion but no perceptible base, in *Charagia* (*virescens*); base to half outer margin in *Trictena* (*labyrinthica*); base to costal side of apices of fore-wings in *Phassus* (*purpurescens*).

The 1st abdominal segment is represented by a small dorsal area without spiracles, 2 has spiracles wholly above edge of wing-cases—except in *Phassus,* where it is partly covered by the extended margin of hind-wing cases. 1st and 2nd abdominal segments have anterior spines in *Charagia,* but not in *Porina, Trictena, Phassus;* 3 to 6 have anterior and posterior ridges with spines commencing in the locality of the spiracles and extending across the dorsum; 4, 5, 6 have ventral spines in position of abdominal feet of larvæ (4, 5 only in *Porina*); 7 is the most characteristic pupal segment, in *Porina* a ventral anterior ridge of spines is strongly developed; *Trictena* has the ventral anterior ridge strongly developed, and also spines extending completely round the segmental ridge; *Charagia* and *Phassus* are similar to each other, both have weak posterior spines, and stronger spines in position of abdominal feet (as on 4, 5, 6), these are connected midventrally by a series of spines posterior to the inner (leg) setæ, in *Phassus,* but not so in *Charagia;* 8, 9, 10 are smooth or nearly so in *Porina, Charagia, Phassus;* 7, 8, 9 in *Trictena* are deeply

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scored and pitted over the dorsal and subdorsal area of segments.

In *Hepialidæ* 3 to 7 are free segments, and probably 8 in the female pupa.

*Notes on Wing Neuration of Imagines.* (Pl. V, figs. 2, 3.)

Hepialid neuration may be written thus:

| subcostal | radial | media | cubital | anal | |
|---|---|---|---|---|---|
| 1 | 5 | 3 | 2 | 1 | = Fore-wing. |
| 1 | 5 | 3 | 2 | 3 | = Hind-wing. |

There are some transverse connections at the base of certain nervures, but only one feature in the neuration appears to have any phylogenetic value, it is the relative position of the radial nervules.

The Trictena pattern has radial 2, 3, forked from a common stem which rises from the nervure below 4, *i. e.* nearer base of the wing, the transverse cell connection is above the point of separation of 4, 5 radial nervules. *Hepialus* (Europe), *Charagia* (Australia), *Phassus* (Asia), *Gorgopis* (Africa) are of this pattern, which is further modified in *Hectomanes* (Australia) and *Palpiphorus* (Asia) by the point of separation of 4, 5 radial nervules being above the "cell" vein, *i. e.* nearer the outer margin of wing.

The Porina pattern has radial nervules 2, 3, 4 forked from a common stem which rises from the nervure below the "cell" vein. *Hepialiscus* (India) is of this pattern. Other modifications are found in each pattern, thus the subcostal and radial nervule 1 are with difficulty distinguished as separate nervures, especially on the hind-wings, where they have the appearance of complete coalescence, but may be distinctly separated after careful examination with a compound microscope; *Charagia* and *Porina* are each modified in this respect. *Hepialus humuli*, *Sthenopis argenteo-maculatus* and *Cibyra sylvinus* have three anal nervures in hind-wings. *Hepialus lupulinus* has one (? two) anal nervure. *Charagia virescens* two. *Gorgopis libania* two. *G. bacotii* two, one of which appears to be fading out. *Hepialiscus* has three anal nervules. *Porina* has two. I regard the decadence of the anal nervules of hind-wings in *Hepialidæ* as of doubtful phylogenetic value. It is probable that the Hepialiscus-Porina pattern of wing neuration is modified from the Hepialus-Trictena pattern, but not possible that the latter

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has modified from the former, it is as nearly certain as anything of the sort can be that the Hepialus-Trictena wing neuration is a generalised pattern, from which the wing pattern of *Hectomanes*, *Palpiphorus*, and of *Hepialiscus*, and *Porina*, have been derived.

*Notes on Scale Structure of Imagines.*

The thorax, appendages, base of wings, and abdomen are covered with hair in the *Hepialidæ;* towards and at the margin of the wings are definite wing scales. I have observed no appreciable difference between the wing scales of ♂ and ♀ of any species. The direction of scales is naturally from base of wing to margin, tip of one scale covering base of next. Wing scales of any given shape may vary somewhat in length or width in different individuals of the same species, irrespective of colour. Side by side on the wing of same specimen, scales may be observed, exactly the same in size and shape, some dark some paler; preponderance of dark scales produces dark specimens and *vice versâ.*

Specific distinction appears in the pattern of the upper surface scales of fore-wings, the scales of the under surface frequently agree with those of the upper, but when differing always have a less specialised shape.

(Pl. VI, figs. A 1—7.) *Porina fuscomaculata* has rather long hairlike scales on the surface of fore and hind wings (Fig. A 6). *P. umbraculata* has short pointed surface scales (Fig. A 1). *P. signata* which resembles the former in markings has two patterns—short broad base (Fig. A 2), uniform short wide scale (Fig. A 3). I could not trace either of these on any specimen of *P. umbraculata.* *P. cervinata* is a variable N. Z. species, and four patterns of surface scales have been observed—as *P. umbraculata* and *P. signata,* and sometimes a short wide scale (Fig. A 4). The surface scales of the hind-wings of *P. umbraculata, P. signata,* and *P. cervinata* are more hairlike and longer than the surface scales of the fore-wings, resembling those of *P. fuscomaculata* (Fig. A 6). Fringe scales can be traced from base to outer margin gradually less and less hairlike, they become definite fringe scales at the outer margin, and comprise in *Porina* two patterns in each of the species mentioned—a wide tip long scale (Fig. A 7) forms an outer fringe, a shorter scale of more uniform width (Fig. A 5) forms an inner fringe, both however rise

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from the edge of wing membrane; on the hind-wings fringe scale 7 is less wide at the tip and shorter.

These are the only wing scales I have been able to determine in the genus *Porina;* all are finely striate longitudinally, none are dentate in the slightest degree. I do not hesitate to believe the surface scale of *P. fuscomaculata* (Fig. A 6) is the most generalised—distinct from hairs—in the *Hepialidæ.*

*Wing scales are modified hairs.*

(Pl. VI, figs. B 1—6.) In the Charagia group several species are green, some have white spots (*C. virescens*), others silvery metallic spots (*C. eximia, C. ramsegi*); the scales of which they are composed are more specialised than the true surface scales, the silvery scales being finely striate, and an effect is produced similar to that of "watered" ribbon. The true surface scales of *C. virescens* are short and rounded on fore-wings (Fig. B 1), longer pointed scales on hind-wings (Fig. B 2) not dissimilar to but wider than the surface scale of *Porina fuscomaculata.* The fringe scales of *C. virescens* fore and hind-wings are of one pattern, short and broad (Fig. B 5), *C. eximia* agrees with *C. virescens. C. ramsegi* has an additional fringe scale longer (and forming an outer fringe) than the *virescens* scale which forms an inner fringe. *C. daphnandræ* has dark coloured spots, the green surface scales are longer, and this species has longer fringe scales. *C. lignivorus* has only partly green fore-wings, surface scales and fringe scales as in *virescens,* and also a longer fringe scale almost identical to Porina fringe scale (Fig. A 7).

I observed some wing scales of worn specimens having been damaged, a false dentation was produced in relation to the striation; a worn specimen of *C. eximia* had some fringe scales with sharp angular corners (Fig. B 6), and some surface were damaged in a similar manner (Fig. B 4); the dentation of these scales was dissimilar, and examination of a fresh specimen showed no such dentation of wing scales. A worn specimen of *C. lignivorus* had some damaged surface scales deceptively dentate (Fig. B 3).

Wing scales of *Charagia* are striate longitudinally without dentation. Fringe scales appear to be modified surface scales in the *Hepialidæ.*

(Pl. VI, figs. C 2, 3.) *Trictena labyrinthica* is an interesting species, surface scales uniform elongate, but varying

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somewhat in shape at tip, some being round (Fig. C 2); fringe scales are remarkably similar to the short fringe scales of *Charagia* (Fig. C 3), but I have not observed in *Charagia* the sloping tip.

*Phassus purpurescens* has "pear-shaped" surface scales, also longer surface scales similar to *Charagia* (Fig. A 7), fringe scales of Porina pattern (Fig. A 7). The prominent fore-legs of *P. purpurescens* are covered with hair, not scales. Wing scales in *Trictena* and *Phassus* are striate longitudinally, not dentate.

(Pl. VI, figs. C 1, etc.) *Hepialus* (*Sthenopis*) *argenteomaculatus* of America has surface scales identical with *Porina* (Fig. A 4) and with *Charagia* (Fig. B 1), the fringe scales are less wide at the tip than in *Porina* (Fig. A 7). *H. humuli* has "pear-shaped" surface scales (Fig. C 1) also noticed in *Phassus*, some have a small blunt point at the tip but no dentation; the fringe scales are attenuated, apparently dentate; all my specimens being captured I am doubtful as to the dentation of the fringe scales, though I believe it to be true dentation; some short attenuated surface scales have similar doubtful dentation. *Hepialus lupulinus* has all the wing scales dentate and almost identical with Gorgopis surface scales and Gorgopis fringe scales. *H. hectus*, *H. vellada*, and *Hepialus* (s. g. *Cibyra*) *sylvinus* have surface and fringe scales similar in shape and dentation to *H. lupulinus*.

Wing scales of *Hepialus* are striate longitudinally, some generalised scales without dentation, and specialised scales with dentation.

*Hectomanes simulans* has surface scales which vary in size, but are all the same shape on fore and hind-wings, slightly dentate at the tips (Fig. D 1), the fringe scales are more noticeably dentate and prolonged to a point at each side of tip; like the fringe scales of *Porina* these have long stem and wide tip. In *H. polyspila* the surface scales are of two patterns, one having a wide base with long neck and slight dentation; this varies in length and width; the other a more uniform, "cigar-shaped," scale, dentate at tip. Fringe scales attenuated but similar to those of *H. simulans*. *H. fusca* has "cigar-shaped" surface scales, and fringe scales not quite so wide at tip as those of *H. simulans*. *Hectomanes* wing scales are finely striate and slightly dentate.

(Pl. VI, figs. E 1—3.) *Gorgopis bacotii* has strongly

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dentate surface scales (Figs. E 1, 2) and fringe scales wide at tip strongly dentate, long stem (Fig. E 3). *G. libania* has very densely scaled wings and remarkably long thick fringes, the surface scales are numerous, some very small some large and wide (Figs. E 4—8), all are dentate; fringe scales are very long, the wide tip being split into long teeth, some of which are as long as the smaller surface scales; side by side in the same fringe are scales of the same shape but variable in dentation, having four, five, or six teeth; the number of teeth in scale dentation is not a reliable character, I have noticed this in other Lepidoptera, notably *Lysiphragma*.

Frenate Lepidoptera usually if not invariably have most of the wing scales dentate, and the thorax, appendages and abdomen covered with scales—not hair—similar to if not identical with the surface scales of the wings; this is so in *Sphinx*, *Acronycta*, *Catocala*, *Herbula*, *Adela*, *Gracillaria*, *Incurvaria*, *Eppippiphora*, and many other genera; among others *Gnophria rubricollis* have rounded abdominal scales, in this respect differing from the wing scales.

These observations attempt to show the evolution of scales from hairs, the specialisation of the scales in *Hepialidæ*, and probable complete displacement of hairs in the Lepidoptera Frenatæ.

*Notes on Antennæ of Imagines.* (Pl. V, figs. 4, 5, 6, 7, 8, 8*a*, 9, 9*a*.)

The segments of the antennæ appear to have definite functions; the basal segment termed the scape—*Hepialus humuli*—is the largest and probably the muscular base of antenna; the second segment termed the pedicel is smaller, probably the nervous base of antenna; the remainder termed clavola, are very much alike, except the two post pedicel segments which are very small, and the terminal segment which is elongate and rounded at the tip. Variation of the scape and pedicel is dependent upon the changes of the clavola (*Bodine*); and specialisation in the *Hepialidæ* is by appendage (pectination) parallel at least to any observed among Lepidoptera Frenatæ.

Probably the least specialised form is that of *Hepialus* and *Charagia*, in which the segments of the clavola are without extended appendages, and are uniformly covered with fine hair, with a few subventral and ventral "sense" hairs—prominent bristles always extended in an anterior

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direction. It is more than a coincidence that *Hepialidæ* with this form of antennæ, the males especially, have the third pair of legs reduced—*Hepialus humuli, velleda, argenteo-maculatus,* or aborted—*Charagia virescens, lignivorus, eximia, ramsegi, daphnandræ,* and the tibia provided with a conspicuous tuft of hair which is probably a sexual, possibly a scent organ; the bladderlike hind tibiæ of *Hepialus hectus* seem to be the latter. *Hepialus lupulinu sis* an interesting species with normal legs, otherwise, so far as my material goes, specialisation of the tibiæ of hind-legs is co-existent with simple antennæ. *Hepialidæ* with specialised antennæ have normal legs.

The clavolar segments of *Gorgopis bacotii* are most interesting, the transverse projection on one side of the shaft, appropriately securiform, is covered with fine hair, but I cannot detect sense hairs (Fig. 5); *G. bacotii* is very different from *G. libania,* which has the shaft attenuated and a prolonged appendage at either side; on the dorsal surface are stout sense hairs which apparently touch the appendage of next segment; there is no ventral appendage.

*Hepialus* (*Cibyra*) *sylvinus* has a robust clavolar shaft with dorsal "sense hairs" and lateral appendage at either side, short, comparatively thick, without "sense hairs." *Hectomanes* have very similar antennæ, they have no ventral appendage (Figs. 8, 8*a*).

*Porina cervinata, umbraculata* and *signata,* have elevated anterior edge, semipectinate laterally, and a posterior ventral hump; these appendages are hairy, the shaft has sense hairs (Fig. 6). I examined a living specimen of *P. cervinata* under a compound microscope, and in whatever direction it moved its antennæ, the "sense hairs" remained stationary on the segments. *P. fuscomaculata* has attenuated shaft to the clavolar segments, bi-lateral appendages hairy, "sense hairs" on the shaft and appendages, and also a hairy ventral hump (Fig. 7).

*Trictena labyrinthica* has a very specialised form of clavolar segment, the lateral appendages are prolonged, hairy and with "sense hairs," between them a long hairy ventral appendage; the clavolar segments have therefore three appendages strongly developed (Figs. 9, 9*a*).

[*See explanation of* PLATES V *and* VI *facing the* PLATES.]

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## PRESENT DISTRIBUTION OF THE HEPIALIDÆ—LEPIDOPTERA JUGATÆ.

| | Species | Australian region | Oriental region | Palæarctic region | | Ethiopian region | Nearctic region | Neotropical region |
|---|---|---|---|---|---|---|---|---|
| | | | | Asia | Europe | | | |
| Hepialus, Fabr. | 13 | | | Altai, Amur<br>Kuku-noor | All Europe | | | Guatemala |
| ,, s. g. Charagia, Walk. | 9 | Australia, N. Z. | | | | | | |
| ,, s. g. Phymatopus, Wallgr. | 14 | | | | Europe | | Hudson's Bay to California | |
| ,, s. g. Sthenopis, Pack. | 5 | | | | | | North America | |
| ,, s. g. Cibyra, Walk. | 6 | | | Corfu, Asia Mnr. | Europe | | | Brazil |
| Dalaca, Walk. | 9 | New Hebrides, Raratonga | | | | | Mexico | Guatemala to Chili |
| Oncopera, Walk. | 3 | Victoria, Tasmania | | | | | | |
| Trictena, Meyr. | 1 | Australia, Tas. | | | | | | |
| Pielus, Walk. | 4 | Australia, Tas. | | | | | | |
| Leto, Hubn. | 2 | N. S. W., Qsld. | | | | South Africa | | |
| Elhamma, Walk. (Porina) | 17 | N. S. W., Qsld., Vic., N. Z. | | | | | | Patagonia |
| Perissectis, Meyr. | 3 | N. S. W., Vic., S. A. | | | | | | |
| Fraus, Walk. (Hectomanes) | 6 | Tas., Qsld., Vic., S. A. | | | | | | |
| Phassus, Walk. | 20 | | India, Ceylon, Burma<br>Perak, Borneo | Japan, China | | | Mexico | South America |
| Gen. nov. | 3 | | | | | | | Brazil |
| Hepialiscus Hampson | 1 | | India, Nepal, Sikhim | | | | | |
| Palpiphorus, Hampson | 5 | | Sikhim, Darjiling | Japan | | | | |
| Gorgopis, Hubn. | 5 | | | | | Natal, Transvaal | | |
| Gen. nov. | 2 | | | | | South Africa | | |

Based on list compiled from collection British Museum, by A. Bacot, 1899; with additions and corrections from other sources, by A. Quail, 1900.

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# X. *Stridulating Organs in* Coleoptera. By CHARLES J. GAHAN, M.A.

[Read March 7th, 1900.]

PLATE VII.

IN the course of my work on the Coleoptera I have had occasion from time to time to note the occurrence of stridulating organs in these insects. Some of my observations appeared to be new, but instead of offering these as a separate contribution, I thought it might be more useful to include them in a general account of the subject. This I have endeavoured to give in the present paper. The stridulating organs of beetles, so far as they were known at the time, have been very adequately dealt with by Darwin in his "Descent of Man," and the account which he has there given of them still remains one of the most complete. Landois also, to whose researches we owe a great part of our knowledge of these organs, has given a very full and detailed history of them in his "Thierstimmen," published at Freiburg in 1874. But it was not until that same year that the first account appeared of the remarkably well developed stridulating organs which Schiodte discovered in the larvæ of several genera of beetles; and this, together with the further observations which have been made by others since that date, have somewhat considerably increased our knowledge of the subject, and have added fresh interest to it. Had Schiodte's discovery been known to Darwin it might, perhaps, have led him to modify his view that stridulation in beetles serves as a sexual call, and that the organs by which it is produced have reached their present state of development by a process of sexual selection. If adult beetles alone had to be considered there would be little ground for objecting to this view. But it is quite evident that the stridulating organs must serve some other purpose in the larvæ, and that sexual selection could have had nothing to do with their development; and if this be true of the larvæ there is no reason why it should not be true also in regard to some at least of the adult forms.



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I believe, however, that Darwin's view does on the whole remain true in its application to the perfect insects, although I am unable to adduce any important fresh facts in support of it. One objection to it was the fact that the stridulating organs when present, were found to be, as a rule, present alike in both sexes, showing no appreciable difference in structure or position according to the sex. On his own hypothesis, Darwin expected that the exceptions to this rule would prove to be very numerous, but those that he could find were remarkably few. Many more such exceptions have, however, since been brought to light, going some way towards realising Darwin's expectation, and so far lending support to his view.

The stridulating organs of beetles are, as a rule, very simple in structure, showing no great amount of variety in this respect; but they are, as Darwin has remarked, "wonderfully diversified in position," much more so even than he supposed them to be. Wherever any part of the external surface of the body is subjected to the friction of an adjoining part by the movements of the insect, there, in some species or another, these organs are almost sure to be found. They do not remain constant in position even among the different genera of the same family, yet they sometimes appear unexpectedly having almost identically the same position and structure in one genus that they have in a genus of some totally different family. A Cicindelid, for example, may in this respect be exactly like a Tenebrionid, while two Tenebrionids may be quite unlike one another. Owing to this inconstancy in their position, the stridulating organs of beetles are less important for general purposes of classification than the corresponding structures met with in the Orthoptera; and for this reason among others, I have thought it best to take them according to their position on the body of the insect, instead of in the order of the families in which they are found to occur.

### 1. *Stridulating organs on the head.*

The presence of stridulating areas on the head, though of fairly common occurrence in beetles, was evidently unknown to Darwin and Landois, neither of whom has mentioned any instance of the kind. It was first, I believe, pointed out by Crotch, who in characterising certain genera of *Languriinæ*, noticed that there was a

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single stridulating file on the crown of the head in the genus *Goniolanguria*, and that there were two such files in the genus *Teretilanguria*. Dr. D. Sharp has since detected the presence of a stridulating area in the same position in the genus *Ips* and allied forms of the family *Nitidulidæ*, and Mr. Gorham has discovered it in two species of *Endomychidæ*—*Encymon ruficollis*, Kirsch, and *Phæomychus rufipennis*, Motsch., as well as in some additional genera and species of *Languriinæ*.

In the *Endomychidæ*, stridulating organs are much more generally present than Mr. Gorham seems to have suspected, and it is owing, perhaps, to the somewhat exceptional character of the striated area in *Encymon ruficollis*, that his observations in reference to this species are not altogether accurate. "The true characters are," he says, "sexual and very interesting. The male in this species has the head furnished with a stridulating file on the crown formed of fine transverse striæ, the front edge of the thorax in this sex having a small fossa corresponding to an internal projection for the purpose of rasping the file. This apparatus does not exist in either of the allied species; although the fossa is feebly present in some specimens, there are no corresponding striæ."

I have, as I believe, correctly determined the sexes of *E. ruficollis*, and I find the stridulating area present and having the same appearance in both sexes. It consists of two portions differing in the character of the striation. The more coarsely striated part lies in front, and is generally exposed to view, while the more finely striated posterior area is usually hidden under the pronotum. In his examination of the species, Mr. Gorham seems to have seen only the anterior more coarsely striated area, and to have overlooked the other portion, which, in position and in the fineness of its striæ, corresponds almost exactly with the stridulating area present in all other species of the genus *Encymon*, and in those of several other genera of *Endomychidæ*.

Certain authors appear to set very little or no value whatsoever on the stridulating organs as affording characters to be used in the classification of Coleoptera. There can be no doubt that these organs have arisen independently in the same position and with an almost exact identity of structure in different families of beetles, so that it would be wrong to assume from any close



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similarity in position and structure of the stridulating organs in certain families, that these families were therefore closely related to each other.

But the case seems to be different when we come to consider genera and other minor groups within the family, and if certain species of a genus, or certain genera of a family agree in possessing stridulating organs, in the same position, and with the same kind of structure, it is safe to infer that such species or such genera, as the case may be, have derived this character from a common source, and are more closely related to each other than to those species or genera which do not offer the same character.

These remarks may be illustrated by a further reference to the family *Endomychidæ*. In all the species I have so far examined belonging to the "groupes" *Eumorphites*, *Corynomalites* and *Lycoperdites*—the three groups which come first in Chapuis' arrangement of the family—a stridulating area has been found present on the head in both sexes. It appears to be absent in the other "groupes," or if present, to be present in a most rudimentary condition. The first three "groupes" might therefore be associated in one large group distinguished by the possession of stridulating organs, and such a group would, I think, be admitted as a natural one.

Stridulating organs occupying the same position on the head, and very similar in all points of structure to those of the *Endomychidæ* are very generally present in the *Hispidæ*, but it has never been suggested that these two families are in any way closely related to each other.

In the *Hispidæ*, as in the *Endomychidæ*, the stridulating organs have as a rule the same characters in both sexes, the only exception so far met with, occurring in the genus *Spilispa*, Baly.

In *Spilispa imperialis*, Baly, there is no true stridulating organ in the female, whereas in the male the stridulating area on the crown of the head is well-defined, though somewhat exceptional in structure, the series of ridges of which it is formed being slightly arcuate, less closely approximated than usual, and marked with short longitudinal furrows (Pl. VII, figs. 2 and 2*a*). The male of this species is further distinguished by the presence of a small triangular flap, thin and semi-membranous, projecting from the front margin of the pronotum (figs. 2 and 2*b*). What part this flap takes in stridulation does not

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seem clear; it can scarcely act as a scraper, an inwardly projecting rim at its base where it joins the pronotum appearing to serve for that purpose. It may possibly be set in vibration, and serve to augment or modulate the sound produced by the scraping of the file on the head. A somewhat similar but less conspicuous modification of the anterior edge of the pronotum occurs in both sexes of *Estigmena* and other genera of *Hispidæ* and in nearly all of the stridulating species of *Endomychidæ*, appearing in most in the form of a small pit or depression such as is described by Mr. Gorham in his reference to the stridulating organ of *Encymon ruficollis*, Kirsch.

The stridulating area in *Estigmena chinensis* is divided into two parts by a short depressed interval, the anterior being much more finely striated than the posterior part, thus by its structure seeming capable of producing a very much higher note when rubbed by the edge of the pronotum. In *Hispopria foveicollis*, Baly, the stridulating area is still more complex, consisting of three parts (Pl. VII, figs. 3 and 3*a*); the part in front, forming the apex of a triangular area, is very finely striated, and is followed behind without any break by an area in which the striæ are much coarser and less approximate to one another; this area is succeeded by a pit-like depression, behind which there is a short space presenting a fairly regular transverse striation somewhat intermediate in character between the other two. Equally complex is the condition existing in *Anisodera scutellata*, Baly, the striated area on the head being similar to that of *Hispopria* with this difference only, that the three parts of the area are divided from one another by shallow transverse depressions.

From the structure of their stridulating apparatus it is to be inferred that these beetles can and do produce sounds of at least two different degrees of pitch (and probably of three), one being about an octave higher than the other, while further the possibility has to be admitted that by the requisite movement of the head, the beetles might be able to vary the order or succession of the notes in such a way as to give rise to several simple musical airs.

Unfortunately no observations have yet been recorded in reference to the nature of the sounds made by the living insects, and although it is very unlikely that such observations will prove the sounds to be so varied as the

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theoretical possibilities of the case would seem to allow, they will probably show them to be a good deal removed from the ordinary monotonous squeak produced by the majority of stridulating Coleoptera.

In addition to the genera mentioned above, stridulating areas on the upperside of the head are found to be present in species belonging to the following genera of *Hispidæ: Wallacea, Botryonopa, Oxycephala, Cephalodonta, Prosopodonta* and *Hispa.* They are absent in *Arescus, Alurnus* and a few other genera, but taking the family as a whole, they will probably be found to occur in a majority of the species, and as they seem to offer a sufficient amount of variety in the details of their structure they will probably prove to be useful as aids in the diagnoses of species and sub-genera, if not of genera.

In several genera of Coleoptera the striated area is situated not on the upperside, but in a corresponding position on the underside of the head, sound being produced by the friction of this area against a small, inwardly projecting ridge at the anterior edge of the prosternum. A well-defined triangular or lenticular area marked with very regular transverse striæ is to be seen on the gula in the Tenebrionid genus *Praogena* and in the allied genera *Nesogena, Dysgena* and *Lamprobothris.* Its presence in the first-named genus was pointed out by me a few years ago, but since then I have found that the gular stridulating area is equally well-developed in many other *Tenebrionidæ,* being in some cases characteristic of genera, in others of small groups of genera. It occurs in all the species I have examined belonging to the genera *Gonopus, Anomalipus, Hopatrinus, Selinus, Trigonopus, Pseudoblaps, Platynotus* and *Eurynotus,* and is to be found in several, but not all of the species of *Helops.*

Its presence in *Selinus* affords a further means of distinguishing the species of that genus from those of *Dendarus,* to which they have sometimes a very close resemblance.

It occurs also in the genus *Stenerula,* Fairm., of the family *Cistelidæ,* and outside of the Heteromera, is met with again under a slightly different form in the genera *Priobium* and *Dryophilus* of the family *Ptinidæ,* and *Scolytus* of the family *Scolytidæ.* Its presence in *Priobium* was scarcely to be expected, and is very interesting, in view of the fact that some of the allied species of *Anobiinæ*—

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the so-called "death-watches"—have such a different means of producing sound.

On the hinder part of the underside of the head of *Priobium castaneum*, Fab., a comparatively large subcircular area is to be seen, bounded at the sides by sutural lines. This area is slightly convex, and is traversed towards each side by a regular series of very fine, parallel transverse ridges. The ridges are not continued across the median part of the circular space, so that there are in reality two separate striated areas, each somewhat elliptical in outline.

In *Dryophilus pusillus*, Gyll, the position of the stridulating organ is the same as in *Priobium*, but in this case the striæ appear to run right across the whole of the circumscribed space forming but a single stridulating area.

In the genus *Anobium* proper, the gula is less extensive than in *Priobium*, and has no trace of a stridulating area, but in many of the species there is a curious series of ridges on the underside of each elytron close to its outer and apical margin, suggesting that the elytra may in these cases be used for purposes of stridulation. These ridges are not present in *Priobium*, and are wanting also in *Xestobium tessellatum*,—one of the species which are known to make a noise by tapping their head against the wood on which they stand.

The stridulation of *Scolytidæ* was first noticed by Dr. T. A. Chapman, who, in a very instructive article on the habits of these insects,* relates among other facts, that "*Scolytus destructor*, *intricatus* and *pruni* squeak audibly, by a rapid movement of the abdomen against the elytra, *intricatus* making the loudest sound."

This statement was accepted by Darwin and others, and apparently has never since been disputed. For my own part, being curious to examine the stridulating organs in these insects, and not doubting the accuracy of so keen and critical an observer as Dr. Chapman, my search was for a long time confined to the elytra and abdomen, but with negative results, forcing me to the conclusion that Dr. Chapman's statement must have been based solely on his observation of the movements of the insects and not on any actual examination of the structures concerned in stridulation. This was fully confirmed when later I found

* "Ent. Mo. Mag." VI, p. 130 (1869).

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that the stridulating area in these insects is situated on the underside of the head.

In *S. destructor*, *ratzeburgi*, *pruni* and *multistriatus*, it is a narrow elongated, very slightly elevated space, running along the middle, up to the hind margin of the head, and crossed by a series of very fine parallel ridges, the shape of the area being almost exactly the same in all of these species (Pl. VII, figs. 9 and 9*a*).

In *S. intricatus* the stridulating area is shorter and broader, and appeared to me (but of this I cannot speak with certainty, not having made exact measurements) to be somewhat less finely striated (Pl. VII, figs. 10 and 10*a*).

*Scolytus rugulosus* appears to be without a true stridulating area, the gula in this species being marked along the middle with a depressed line or groove from which coarse ridges run transversely towards the sides of the head. Ridges of a similar character, often continued right across the underside, and sometimes all round the head, are met with in other *Scolytidæ*, and occur frequently among the *Curculionidæ*. They are in some cases so regular and parallel as to make it doubtful whether they do not serve for stridulation, but certain species in which they occur are not known to stridulate, and as I have found them present in species which possess a true stridulating area on the elytra, I am inclined to think they are never used for that purpose.

Stridulating organs situated on the mandibles and maxillæ have been described by Schiodte as occurring in the larvæ of certain genera of *Dynastidæ*, *Cetoniidæ*, *Rutelidæ*, *Sericidæ*, *Melolonthidæ* and *Copridæ*. They consist of (1) a series of teeth on the upper face of the maxillary stem (stipes), and (2) special granulations variously placed and grouped on the lower face of the mandibles, the parts being so disposed that the teeth on the maxillæ reach and rasp the granulations on the mandibles when the maxillæ are moved backwards and forwards. In *Dynastidæ* and *Cetoniidæ* the granulations are arranged to form rather strong transverse ridges, which occupy a somewhat elliptical and completely circumscribed area near the base of each mandible. In the *Rutelidæ* they differ only in that the ridges formed by them are much finer, more numerous, and placed closer together; but in the larvæ of the other groups the granulations do not form ridges. Dr. Sharp believes that these structures are little

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adapted for the production of sound, but judging from the excellent figures which Schiodte has given of them ("Naturhistorisk Tidsskrift," Ser. 3, Vol. IX, 1874), and from what little I have seen of them in one or two species, I should consider them very well adapted for the purpose; and such is, I believe, their true function.

2. *Stridulating organs on the prothorax and front legs.*

These are found only in a relatively small number of genera and species, but some of them are very interesting as being amongst the most perfect of their kind. The stridulating apparatus met with in several species of the Carabid genus *Siagona* has recently been figured and described by MM. Bedel and Francois in the "Bulletin de la Soc. Ent. de France" for 1897. It consists of a transversely striated or ridged carina running along under each side of the prothorax, and of a very small striated area on the outer face of each of the front femora, this area being so placed as to come in contact with the ridge on the prothorax, when the femur is rubbed along the side of the latter. An arrangement somewhat similar to this occurs in the Bostrychid genus *Phonapate*, Lesne (see Pl. VII, figs. 7 and 7*a*), and has been described by M. Lesne as one of the distinctive characters of his genus. In the females of *Phonapate* each of the anterior femora has a well-defined longitudinally striated area on its outer face close to the apex, and when the femur is rubbed along the side of the prothorax, this area is made to scrape against a series of six or seven short oblique ridges placed near the hind angle of the thorax. The whole apparatus is one of the most perfectly developed met with amongst the Coleoptera, but what makes it especially remarkable is the fact that it occurs only in the females, the males, so far as is known, being without stridulating organs of any kind. This is the only instance known to me, in which the stridulating organ of insects is confined to the female sex. (The bed-bug may prove to be another exception, the complicated apparatus discovered by Dr. Ribaga in the female of this insect being conjectured by him to be a stridulating apparatus.)

In *Omaloplia brunnea* the stridulating area is situated on the prosternum. Westring has long since pointed out that the dorsal or inner face of the intercoxal part of the prosternum is transversely striated, and that stridulation

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results from the rubbing of this face against a process of the metasternum, which projects into a hollow space lying above it.

It is a well-attested fact that *Cychrus rostratus*, and one or two other species of the same genus of *Carabidæ* stridulate loudly; and the late Mr. Frederick Smith went so far as to declare that *Cychrus rostratus* stridulates more loudly than any other beetle found in England. One would naturally expect therefore that the stridulating apparatus is well-developed in this species and easily to be seen; but, so far as I can find, nothing that can satisfactorily be regarded as the stridulating apparatus has up to the present time been described.

The stridulation of *C. rostratus* is noticed in Kirby and Spence's "Entomology," and is there stated to be produced by the friction of the prothorax against the base of the elytra. On the other hand Mr. T. Marshall, in the "Entomological Magazine" for 1833, attributes it to the friction of the lateral edges of the abdomen against a very fine file lying in the epipleural groove along the side of each elytron. Darwin examined the species, but was unable to detect the presence of any rasp or file. Even if such a file as Marshall has indicated did exist, it would, I think, be impossible for it to operate on the edges of the abdomen in such a way as to produce an appreciable sound. As far as I could make out, the elytra play no part in stridulation, and the only structures I could discover at all likely to answer the purpose are situated on the epimeral lobes of the prothorax. These lobes are somewhat larger and more prominent in *Cychrus* than is usual in *Carabidæ*, and the inner (hidden) face of each is traversed by a series of rather coarse but fairly regular ridges, running approximately parallel to one another in a direction almost at right angles to the longer axis of the lobe. When the prothorax is bent up and down these ridges rub over the sides of the mesosternum, which in their outer part are slightly rugose, and the friction results in the production of sound. By rubbing these parts together in dead specimens I did not succeed in producing more than a feeble sound. But Mr. Bernard Penny, a young entomologist interested in the stridulation of beetles, wrote in answer to an inquiry from my colleague Mr. Arrow, that "the noise [of *Cychrus rostratus*] seems to me to be produced by the friction of the lower part of the base of the

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thorax against a small plate on or about the episternum, in fact, as far as I can judge,—sternum against episternum. The sound is shrill and clearer than that of *Aromia moschata*. When held between the finger and thumb, the beetle moved the head downwards and up again, but the sound was only produced on the downward motion. The thorax did not move much." These observations of Mr. Penny go far to show that the structures I have described constitute the true stridulating apparatus of *Cychrus*. At the same time I am obliged to admit that the ridges on the epimera are much coarser and less regular, and the lateral edge of the mesosternum appears less efficient as a scraper, than the corresponding structures concerned in the stridulation of other beetles; and I have difficulty in understanding why the sound produced by their action should be shriller and clearer than that made by the Longicorn beetles.

*Hydrophilus piceus* makes a clearly audible sound, described to me by Mr. H. Donisthorpe and Mr. F. Terry, both of whom have kept the living insects under observation for a long time, as being a distinct stridulation like that of the Longicorns. During the process of stridulation the abdomen was observed to move rapidly, from which it was inferred that the sound was produced by the friction of the abdomen against the elytra. I had previously seen it stated that *Hydrophilus* makes a kind of rustling noise in that way. But having carefully examined the abdomen and elytra I could find no structures that seemed at all capable of giving rise by their action to a distinct stridulation. The most likely structures of the kind are very similar in character to the epimeral ridges of *Cychrus*, and only slightly different in position, the ridges in *Hydrophilus* being placed transversely in a small area on each side of the under surface of the pronotum just where the latter fits over the outer edge of the mesosternum.

3. *Stridulating organs on the mesothorax and middle legs.*

A stridulating area situated on the mesonotum, median in position and usually undivided, occurs in most of the Longicorn beetles, excepting the *Prionidæ*, in which it is present in the genus *Philus* only. But in certain genera and groups of genera both among the *Cerambycidæ* and *Lamiidæ* it is entirely wanting. The ridges are as a

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rule of the same character throughout the whole of the stridulating area, and show no appreciable difference according to sex, though varying in number and the degree of fineness in different species and genera. The only exceptions to this rule, so far as I know at present, are met with in the Madagascar genera *Ranova*, *Leucographis* and *Lasiocercis*. In these the ridges are much coarser in the male than in the female, and in both sexes become distinctly coarser and less approximate to one another in passing from the hind to the front end of the stridulating area.

Stridulating organs similar in character and position to those of the Longicorns are found in the Phytophagous beetles of the family *Megalopidæ*. They were first noticed by Lacordaire, whose observations in reference to them seem to have been entirely overlooked by subsequent writers. They appear to be present in both sexes throughout the whole family.

Stridulation in beetles of the family *Clythridæ* is noted by Darwin in his "Descent of Man." He attributes the discovery to Crotch, and states, erroneously, that the stridulating area is situated on the pygidium. The stridulating areas—two in number—are on the mesonotum, lying close alongside its lateral edges. I have found them present in most of the species which I have examined, but they appear to be altogether absent in a few genera, and are wanting also in certain species of *Clythra* which differ in other respects from the remaining species of that genus. Stridulation can be easily produced in cabinet specimens of some of the larger species, by forcibly moving the prothorax backwards and forwards over the mesonotum.

The most interesting, perhaps, of all the stridulating organs of Coleoptera are those discovered by Schiodte in the larvæ of *Lucanidæ*, *Passalidæ* and *Geotrupidæ*, and figured and fully described by him in the "Naturhistorisk Tidsskrift," Ser. 3, Vol. IX (1874). In these larvæ the sound-producing organs are situated entirely on the legs, a series of ridges or tubercles on the coxæ of the middle legs constituting the rasps or files, and structures adapted for the purpose on the hind-legs acting as the scrapers. In the larvæ of the common stag-beetle, a ridge along the anterior face of each of the hind-legs is made up of a series of short transverse tubercles, and stridulation is produced by drawing this ridge along the hard, serrate or

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crenulate, edge of a plate forming part of the middle coxa, the action being much the same as when the edge of one file is drawn obliquely across the edge of another. The larvæ of *Passalidæ* practically have but two pairs of legs; for the hind-legs, though present, are as legs almost absolutely functionless, and seem to be used only for the purpose of producing sound. These legs are very greatly reduced in size, being only just sufficiently long to reach forward as far as the coxæ of the middle legs and scrape the transversely ribbed areas which are specially situated there. In the forms described by Schiodte each of the hind-legs is narrowed towards the apex, and furnished there, as well as on its anterior face, with special rasping teeth; but in other forms, one of which has been figured and described by Dr. Sharp in the "Cambridge Natural History," each of these legs resembles a paw, the rasping teeth being spread out in a row at the apex.

The profound modification which the hind-legs have undergone, apparently in order to become more efficient as sound-producing organs, suggests that stridulation has some important bearing in the life of these larvæ. But as the larvæ live concealed in burrows made by eating through the decaying wood of old stumps or trunks of trees, it seems unlikely that stridulation can be of much, if any, use in protecting them from their enemies. Then what is its use? My colleague, Mr. Waterhouse, has suggested to me that, with a number of larvæ living close together in the way described, it would be an advantage to each to be left in undisturbed possession of its burrow, and to eat its way in such a direction that it would not cross the path of another. Stridulation as a means of effecting this becomes useful to the larvæ. Acting as a sort of declaration of each individual's rights, it would tend to promote general harmony. This suggestion as to the use of the stridulating organs will, however, scarcely apply to the larvæ of the *Geotrupidæ*, since these larvæ, which live at some depth underground, are not, so far as I know, usually met with living in close proximity to one another. But every other suggestion I have heard seems to offer as great or even greater difficulties, and I fear that the precise use and meaning of these organs will for some time longer remain a mystery. Judging from what I have seen of them in the larvæ of *Lucanus cervus*, the stridulating organs seem to be developed at a very early stage,

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and to be retained throughout the whole life of the larva.

It has been stated by Leconte that some of the adult *Passalidæ* stridulate by rubbing the inner surface of the sides of the elytra over the sides of the abdomen; but I have not been able to find any true stridulating area in the position indicated by him. The adult *Lucanidæ* are without stridulating organs; and the species of *Geotrupes* while capable of stridulating loudly do so in a manner different to the larvæ. The stridulating organs appear therefore to have arisen quite independently in the larvæ of these families.

Stridulating structures are not known to occur on the middle legs of adult beetles except in those remarkable Longicorns from the Sandwich Islands belonging to the genus *Plagithmysus*. These beetles not only stridulate in the ordinary manner of Longicorns by moving the edge of the prothorax over a striated area on the mesonotum, but have in addition a stridulating file along the lateral edge of each elytron against which they rub the hind femora; while there is present also on each of the middle and hind coxæ a series of ridges which in some species are very regular and parallel, and are considered by Dr. Sharp, who discovered them, to be true stridulating structures.

### 4. *Stridulating organs on the hind-legs, elytra and abdomen.*

In the species of *Geotrupes* and *Typhoeus*, an oblique ridge on each of the hind coxæ is transversely striated, forming a file which scrapes against a ridge in the coxal cavity when the coxa is turned.

In *Heliocopris* the posterior surface of each of the hind coxæ exhibits a short transverse elevation marked with a few transverse striæ; but the stridulating area proper is on the inflexed part of the first abdominal segment which helps to form the coxal cavity, while the striated ridge on the coxa seems to act chiefly as the scraper. I am indebted to Mr. H. E. Andrewes for calling my attention to the stridulation of this genus. He says that some of the large Indian species stridulate very loudly, the stridulation being produced by the motion of the hind coxæ in their sockets. I have found it easy to produce a tolerably loud sound in dead specimens by turning the

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coxæ backwards and forwards in their sockets. Stridulating organs are present in all the species of *Heliocopris* which I have had an opportunity of examining; but I was unable to find them in any species of *Catharsius*, a genus so closely allied to *Heliocopris* that some authors refuse to consider it distinct. Both genera were formerly included in *Copris*, and though some species of *Copris* proper have the power of stridulating, the method is not the same as in *Heliocopris*. According to Darwin, *Copris lunaris* stridulates by rubbing the abdomen against a very narrow striated ridge situated on the underside of each elytron close to its sutural margin.

Stridulation in the Rutelid genus *Macraspis* has been noticed by Dr. Ohaus, who, in ascribing it to the friction of the hind femora against a number of oblique ridges on the side of the abdomen, appears to have overlooked the fact that the arcuate ridge, situated on the outer part of the upper face of each femur, which rubs against the abdomen is itself transversely and very regularly striated, and constitutes the true stridulating file, the widely separated ridges on the abdomen merely serving to act as so many scrapers. The whole apparatus as it occurs in this genus has recently been correctly described by my colleague Mr. G. J. Arrow, who assisted me in examining it.

Dr. Sharp ("Ent. Mo. Mag." XI, 1874) has fully described the somewhat similar means by which stridulation is produced in certain species of the Cetoniid genus *Lomaptera*, since associated together by Dr. Gestro in a separate genus to which he has given the name of *Ischiopsopha*. Here the ridges on the abdomen are situated towards the sides, on the second and third segments, a few on the fourth; they are more regular and very much closer together than in *Macraspis*, and form the true stridulating areas, the upper surface of the femora which rubs against them being furnished with a number of rather widely separated scraping ridges.

The little beetles of the family *Heteroceridæ* also stridulate by rubbing the hind femora against the fore part of the abdomen. A well-marked ridge lying in the form of a segment of a circle on each side of the first ventral plate acts as the file, being very finely striated in its inner and posterior part, less finely in its outer and anterior part; while a single very narrow ridge on the upper face of each femur performs the part of a scraper. Schiodte has

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accurately described these structures, but Erichson was the first to call attention to them.

Stridulating files situated on the elytra are to be found in *Oxycheila*, a genus of *Cicindelidæ*, in *Blethisa* and *Elaphrus* (family *Carabidæ*), in *Pelobius* (*Dytiscidæ*), in *Trox*, *Copris* and *Ligyrus* (*Scarabæidæ*), in *Cacicus* (*Tenebrionidæ*), in several genera of *Curculionidæ*, and in a few *Prionidæ*.

In *Oxycheila* a narrow ridge running along the edge of each elytron just above the epipleural fold is very finely and regularly striated in a transverse direction. The stridulation, as Lacordaire has noticed, is produced by rubbing the hind femora along these ridges, but he apparently failed to observe that the part of each femur which rubs along the edge of the elytron is also very regularly striated, the striated area forming a narrow strip with the striæ running in a longitudinal direction. In the Heteromerous genus *Cacicus*, represented by a single species, *C. americanus*, Sol., the stridulating apparatus is remarkably like that of *Oxycheila*, each of the hind femora being striated in the same way. But in this genus (see Pl. VII, fig. 8) the elytral file is placed much higher up on the side and takes a sinuous course. The little transverse ridges of which it is formed are sufficiently strong to be plainly visible to the naked eye, and it is interesting to note that instead of being exactly parallel with one another, they are so set on the different parts of the file that they always correspond in direction with the striæ on the femur as the latter rotates when rubbing along the side of the elytron. Lacordaire, who heard the stridulation in this species, has described the method by which it is produced, although failing to notice in this case also that the hind femora are longitudinally striate and thus specially adapted for the part they play in the process. From the structure of the parts concerned, one would expect that the stridulation of this species would be particularly loud, but Lacordaire does not appear to have noticed anything specially remarkable in this respect.

A stridulating file runs along the edge of each elytron in some species of *Prionidæ* (it is best developed in those of the genus *Ctenoscelis*) as well as in some of the Cerambycid genus *Plagithmysus*, but in these Longicorn beetles, the hind femora, except in the presence of granules or spines, are not specially adapted to act as scrapers.

In the stridulation of the Carabid genera *Blethisa* and

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*Elaphrus*, the elytra and abdomen are the parts concerned. The structures by which it is effected have been on the whole correctly described, especially by Landois in his "Thierstimmen." They consist of (1) a series of very short ridges on the abdomen placed in a slightly arcuate row on each side of the posterior part of the penultimate dorsal segment (see Pl. VII, fig. 1); and (2) a series of longitudinal striæ lying on the posterior expanded part of the epipleural ridge which runs along the underside of each elytron (Pl. VII, fig. 1*a*). Darwin, in referring to the stridulation of *Blethisa*, says: "the transverse ridges on the furrowed border of the abdominal segment do not come into play, as far as I could judge, in scraping the rasps on the elytra," and Landois, quoting this remark, fails to explain exactly how stridulation is effected. In other beetles which stridulate by rubbing the abdomen against the elytra, the movement of the abdomen is a backward and forward one, but in the present case, judging from the direction of the ridges and striæ, these parts can only come into play, when the abdomen is moved from side to side, and such, I conclude, is the actual way in which the stridulation is brought about. This method of stridulating would account also for the fact that the ridges on the abdomen form an arc instead of being placed in a straight transverse row, the actual arrangement being the one best adapted in order that each ridge should act most effectively in scraping the striæ on the elytra.

In *Pelobius* and *Trox* the stridulating file is situated on the underside of each elytron close alongside its sutural margin, a transverse ridge at the border of one of the posterior abdominal segments acting as the scraper. Dr. Sharp has given a full account ("Ent. Mo. Mag." 1897) of the position and structure of the organs in the genus *Trox*, correcting the misstatements that had previously appeared in reference to them. In *Ligyrus* the stridulating file is imperfectly developed, consisting of a number of feeble ridges crossing the central part of the under surface of each elytron. A similar structure is met with in a few other genera of *Scarabæidæ*.

It has long been known that certain of the weevils are capable of stridulating, the sound produced being remarkably loud considering the size of the species. The position of the stridulating area in these beetles was, however, never accurately ascertained until Landois investigated the matter,

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though Wollaston previously professed to have discovered it in a rather large granulated or shagreened area of triangular shape placed close to the apex on the underside of each elytron. The true stridulating area, as Landois has correctly observed, lies close to the suture, and is covered with very regular and parallel transverse ridges, giving it an appearance quite distinct from the reticulated or granulated surface on the outer part of the triangular area. The male only of *Cryptorhynchus lapathi* possesses this elytral file, the female being without stridulating organs of any kind. The same sexual difference was apparently met with in all the species examined by Landois, who has too hastily generalised in stating that stridulating organs are present in the male sex only of *Curculionidæ*. In *Plinthus*, *Acalles*, *Mononychus* and other genera which I have investigated, stridulating files were found to be present on the elytra in both sexes; while in many forms the stridulating files are present in both sexes, but occupy a different position in each sex, being placed on the elytra in the males and on the pygidium in the females. The latter condition occurs in *Cryptorhynchus lirinus*, Boh., *C. lemniscatus*, Boh., and other (probably several) species of *Cryptorhynchus*, in the species of the genus *Camptorhinus*, in *Gasterocercus propugnator*, Sch., *Ectatorhina wallacei*, Lac., and in other genera. The form and position of the pygidial files in the female of *C. lirinus*, figs. 12 and 12*b*, and of *Camptorhinus* sp., figs. 13 and 13*b*, are shown on Pl. VII; in both cases, as in others of the same kind, each of the two files lies along the inner side of a conspicuous triangular area, the outer part of which is usually covered with a fine silky pubescence. A strongly-marked ridge which crosses the underside of the elytron obliquely a little in front of the apex acts as the scraper, the inner part of the ridge (that next the suture) being almost directly transverse and somewhat sharper than the rest (see Pl. VII, figs. 12*a* and 13*a*). A similar ridge present in the males of the stridulating species, stops short as a rule before reaching the suture, allowing the elytral file to extend forwards a short way in front of it (see fig. 5*a*). This condition occurs also in those females in which the files are situated on the elytra.

The scraping of the elytral files is usually effected by means of a series of little granules or tubercles placed at intervals along the pygidium in the females, and along the

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pro-pygidium in the males. The species I have selected to be figured (see Pl. VII, figs. 5 and 6) in order to show these structures best are *Cryptorhynchinæ* of a genus to which Jekel gave the MS. name of *Eupterus*. In the males the scraping tubercles are of such a kind as is usually met with in the other stridulating *Curculionidæ*, but are somewhat more numerous. Those of the female are exceptional in character, they are few in number, of relatively large size, and each is crossed by a series of small ridges (Pl. VII, fig. 6*b*), appearing to be the commencement of what would in time develop into complete pygidial files like those present in the females of other forms.

The stridulating organs of the *Curculionidæ* are on the whole very interesting. They appear to be confined chiefly to the *Cryptorhynchinæ* and a few allied groups, and a more detailed study of them with a view to their use in classification would, I believe, well repay any student working at those groups.

Stridulating areas are situated on the dorsal side of the abdomen in the genus *Necrophorus*, in *Oryctes* and other genera of *Dynastidæ*, in the genera *Lema* and *Crioceris* of the family *Crioceridæ*, and in the males of the Tenebrionid genus *Heliopathes*.

In *Necrophorus* they are narrow and strongly raised, forming two very distinct and conspicuous files on the back of the fifth segment. A short transverse ridge on the underside of each elytron just in front of its apex acts as a scraper. In the *Dyanastidæ* they are usually on the pro-pygidium, and as a rule single; while in *Lema*, *Crioceris* and *Heliopathes* they are double, and placed on the pygidium. There are no special scraping ridges on the elytra in *Lema* and *Crioceris*, but in the males of some species of *Heliopathes*, as Darwin has already noticed, each elytron is furnished near the apex with a special series of short ridges. Sexual differences in the structure of the stridulating areas have been noticed in the *Dynastidæ*, Darwin finding in three or four species of *Oryctes*, that the striæ are coarser and more regular in the male than in the female. The same kind of difference, but even more pronounced, is met with in *Camelonotus*, another genus of that family.

In the water-beetles of the genus *Colymbetes*, there is a series of short longitudinal or oblique ridges, placed close to the hind border, on each side of the second ventral



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it in a rather large triangular shape placed close to the suture, as in each elytron. The true stridulating area, as I have correctly observed, lies close to the suture, and is covered with very regular and parallel transverse ridges, giving it an appearance quite distinct from the reticulated or granulated surface on the outer part of the triangular area. The male only of *Cryptorhynchus lapathi* possesses this elytral file, the female being without stridulating organs of any kind. The same sexual difference was apparently met with in all the species examined by Landois, who has too hastily generalised in stating that stridulating organs are present in the male sex only of *Curculionidæ*. In *Plinthus*, *Acalles*, *Mononychus* and other genera which I have investigated, stridulating files were found to be present on the elytra in both sexes; while in many forms the stridulating files are present in both sexes, but occupy a different position in each sex, being placed on the elytra in the males and on the pygidium in the females. The latter condition occurs in *Cryptorhynchus lirinus*, Boh., *C. lemniscatus*, Boh., and other (probably several) species of *Cryptorhynchus*, in the species of the genus *Camptorhinus*, in *Gasterocercus propugnator*, Sch., *Ectatorhina wallacei*, Lac., and in other genera. The form and position of the pygidial files in the female of *C. lirinus*, figs. 12 and 12*b*, and of *Camptorhinus* sp., figs. 13 and 13*b*, are shown on Pl. VII; in both cases, as in others of the same kind, each of the two files lies along the inner side of a conspicuous triangular area, the outer part of which is usually covered with a fine silky pubescence. A strongly-marked ridge which crosses the underside of the elytron obliquely a little in front of the apex acts as the scraper, the inner part of the ridge (that next the suture) being almost directly transverse and somewhat sharper than the rest (see Pl. VII, figs. 12*a* and 13*a*). A similar ridge present in the males of the stridulating species, stops short as a rule before reaching the suture, allowing the elytral file to extend forwards a short way in front of it (see fig. 5*a*). This condition occurs also in those females in which the files are situated on the elytra.

The scraping of the elytral files is usually effected by means of a series of little granules or tubercles placed at intervals along the pygidium in the females, and along the

segment of the abdomen. These ridges have been referred to by different authors, as a stridulating apparatus, but I think they can only be doubtfully regarded as such. I am not aware that these beetles have ever been heard to stridulate.

As these pages were passing through the press, Mr. Distant called my attention to some remarks in reference to stridulation which appear in a work entitled "On the Indian Hills," by Edwin Lester Arnold (vol. ii. p. 313). Mr. Arnold, struck by the loud noise made by a large Longicorn beetle, *Batocera rubus*, was desirous to find out how the sound was produced, so he "took him home and investigated"; and with what result, he goes on to tell us: "He squeaked most strangely all the time, moving his head backward and forwards and waving his antennæ. This gave me a clue, and I dipped a small feather in oil and passed it lightly round the junction of the head and thorax, and in a moment all sounds ceased though the insect still continued his movements, and it was plain the sound had been caused by friction of his head and neck."

Now as it is well known that *Batocera* squeaks like other Longicorns by rubbing the prothorax over the stridulating area on the mesonotum, which is very large and conspicuous in this genus, I am at a loss to explain why all sounds ceased when oil was passed between the head and prothorax. The inference drawn by Mr. Arnold was of course wrong, but it serves to show how easily mistakes of the kind may be made, even by painstaking investigators.

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## Explanation of Plate VII.

[*See explanation facing the* Plate.]

October 22, 1900.

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FOR THE

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| ,, | November ... ... ... ... ... | 7 |
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OF THE

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OF

# LONDON

FOR THE YEAR

1900.

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*WITH ONE PLATE.*

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Bluish black below, above reddish cupreous, basal joints of t
antennæ fulvous, thorax broad, minutely and closely punctured, ely
finely and closely punctate-striate, the last interstice longitudina
convex.

Length 5 millim.

*Fem.* Of broad and robust shape, the head closely and fin
punctured, the clypeus broad, subquadrate, more strongly punctur
its anterior edge nearly straight, slightly sinuate at each side, labru
blackish, antennæ extending to the base of the thorax, black, t
lower five joints fulvous, stained with piceous above, terminal joi
strongly thickened ; thorax very strongly widened at the middle
a longitudinal sense) greatly narrowed anteriorly, the anterior marg
less than half the width of the posterior one, the sides strong
oblique, rounded, posterior margin broadly produced at the midd
accompanied by a row of small punctures at the sides, the surfa
finely and closely punctured, the interstices everywhere acicula
scutellum broader than long, impunctate ; elytra broad and co
paratively short, scarcely more strongly punctured than the thor
the punctures arranged in closely approached, semi-regular ro
those at the base near the shoulders slightly larger, the last interst
near the lateral margins from the middle to the apex costate ; bel
and the legs bluish black.

*Hab.* AMAZONS.

Larger, broader and more robust than most of t
nearly similarly coloured species ; the thorax broader a
much longer than in *C. peruana*, Jac., the punctuation
the elytra finer and closer and the underside and le
nearly black.

### *Chalcophyma lefevrei*, sp. n.

Dark violaceous blue below, the basal joints of the antennæ a
the last joint of the tarsi fulvous ; above metallic reddish cupreo
thorax strongly punctured at the sides, the latter angulate, ely
more finely punctate-striate.

Length 3 millim.

Head greenish, finely transversely granulate and sparing
punctured, with a central longitudinal depression, antennæ ve
slender, extending beyond the apex of the elytra, the lower five joi
and the eighth more or less fulvous, the others fuscous, third a
fourth joints equal, the following ones more elongate ; thorax m

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than twice as broad as long, the sides angulate below the middle, the rest of the margins oblique, the surface with a few minute punctures at the middle of the disc, the sides strongly and more closely punctured, the punctures round and deep, but not confluent; scutellum impunctate; elytra strongly convex, their greatest elevation before the middle, strongly narrowed at the apex, the surface finely punctate-striate, more strongly so at the sides, the interstices at the same place towards the apex, near the lateral margins, costate; below and the legs dark blue, the last joint of all the tarsi fulvous, posterior femora with a tooth.

*Hab.* AMAZONS.

This species cannot well be the *C. fulgida*, Lef. which is described as nigro-piceous below, with differently coloured antennæ and tarsi, the thorax with foveolate and confluent punctures and angulate *before* the middle. The "habitat" of that species also differs.

*Lamprosphærus bimaculatus*, sp. n.

Oblong, pale fulvous, the terminal joints of the antennæ fuscous, thorax extremely minutely and closely punctured, elytra finely punctate-striate, each with a black, oblong spot below the base.

Length 5 millim.

*Mas.* Head with a few fine punctures, the clypeus more closely punctured, distinctly separated, antennæ extending below the middle of the elytra, the lower three or four joints testaceous, the others fuscous; thorax more than twice as broad as long, greatly narrowed in front, the sides strongly rounded, the angles not produced, slightly thickened, the surface extremely finely and closely punctured; elytra oblong, with a shallow depression below the base, finely and closely punctate-striate, the punctures rather larger within the depression, extremely fine at the apex, each elytron with an oblong black spot near the middle, placed rather nearer to the sutural than to the lateral margin; below and the legs entirely fulvous, elytral epipleuræ rather narrow below the middle.

*Hab.* RIO JANEIRO.

I only know a single specimen of this species, quite distinct in its system of coloration from any of its allies, also more oblong in shape and with narrower elytral epipleuræ than is generally the case in this genus.

*Lamprosphærus* was established by Baly on species of very rounded and convex shape, differing from *Chrysodina*

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elytral epipleuræ; the absence of a thoracic groove at the sides below, distinguishes the genus from *Chalcophyma* and *Chalcoplacis*. *Lamprosphærus* is entirely confined to South and Central America, and contains at present species which are much more elongate or oblong in shape than the typical forms described by Baly; at the same time, I see no reason to separate these generically, as so many intermediate degrees exist and as there is an absence of structural differences.

### *Lamprosphærus bicolorus*, sp. n.

Subelongate, piceous, the basal joints of the antennæ and the tarsi fulvous, thorax minutely and closely punctured; elytra finely punctate-striate, the punctures nearly obsolete below the middle, the basal portion fulvous, the posterior two-thirds bluish black.

Length 4 millim.

*Fem.* Head with a few very fine punctures, the clypeus similarly punctured, triangular, its anterior edge fulvous, nearly straight, labrum piceous, antennæ slender, extending below the middle of the elytra, black, the lower three joints fulvous, terminal joints elongate, scarcely thickened, third joint one-half longer than the second but much shorter than the fourth joint; thorax more than twice as broad as long, distinctly narrowed in front, the anterior margin half the width of the posterior one, the sides rather strongly rounded, with a narrow margin, the surface closely and finely punctured throughout, piceous, with a slight greenish tint; elytra rather elongate, the base with a feeble transverse depression, the surface finely punctate-striate, the punctures as well as the striæ rather distantly placed, the base with a transverse fulvous band extending to one-third the length of the elytra, the rest of a bluish black colour; below and the legs piceous, the tarsi fulvous.

*Hab.* Rio Janeiro.

A species of rather elongate shape and of nearly the same coloration as *L. dimidiatus*, but that species is less elongate, with metallic blue underside and legs, the elytra are more strongly punctured, and the fulvous portion is distinctly narrowed at the suture. I only know a single female specimen.

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*Lamprosphærus fulvicornis*, sp. n.

Bluish black, the antennæ and the tarsi fulvous, head remotely, thorax closely and finely punctured, elytra closely punctate-striate.

Length 3 millim.

*Fem.* Head rather strongly but sparingly punctured, with a central feeble longitudinal groove, the epistome not separated from the face, deeply emarginate at its anterior edge, labrum fulvous, antennæ extending to about the middle of the elytra, the terminal joints slightly thickened, entirely fulvous, the second joint thicker but scarcely shorter than the third one; thorax more than twice as broad as long, the sides rounded, moderately narrowed in front, the surface very closely and finely punctured throughout, with some still more minute punctures on the interstices; scutellum metallic greenish, impunctate; elytra finely and remotely punctate-striate near the suture, much more strongly so at the sides, the interstices at the latter and at the apex, costate; anterior legs dark fulvous, the other legs bluish black, all the tarsi pale fulvous.

*Hab.* AMAZONS.

Much smaller than *L. fulvitarsis*, Baly, the entire antennæ fulvous, as well as the labrum, the disc of the thorax not granulose and not sparingly but very closely punctured; from other species of the genus the present one differs in the colour of the tarsi as well as in its general coloration.

*Lamprosphærus humeralis*, sp. n.

Subovate, black, the basal joints of the antennæ, the labrum, palpi and the tarsi fulvous, thorax strongly and closely punctured, elytra closely punctured in rows, dark purplish, the shoulders with a subquadrate red patch.

Length 2 millim.

Head distinctly but not very closely punctured, black, with a slight purplish tint, the labrum and palpi fulvous, antennæ with the lower six joints fulvous (the rest wanting); thorax strongly transverse, the sides obliquely narrowed anteriorly, the disc strongly and closely punctured, but more remotely so at the middle; elytra ovately rounded, not more strongly punctured than the thorax, the punctures arranged in rather closely approached rows which get finer towards the apex, the colour dark purplish, with a bright red subquadrate patch placed on the shoulders, extending downwards nearly to the middle and half-way across the disc; below and the legs black, the tarsi fulvous.

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coloration
female.

Very cor
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sparingly p
Length 6
*Fem.* He
longitudina
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*Hab.* A

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thorax close
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widened, br
Length 4
*Fem.* (?)
but not clos

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indistinctly separated from the face, with a few punctures only, antennæ extending slightly below the middle of the elytra, black, the lower six joints fulvous, the basal joint stained with black above; thorax dark metallic greenish or æneous, strongly transverse, the sides feebly rounded at the middle, the surface evenly, finely and closely punctured; scutellum broad, metallic green; elytra oblong, slightly narrowed posteriorly, with a transverse depression behind the fulvous portion, more strongly punctured than the thorax, the punctures arranged in closely approached rows, the basal portion fulvous in shape of a transverse band, its lower edge strongly obliquely narrowed at the suture, the posterior portion of the elytra metallic bluish; below and the legs greenish-æneous or bluish.

*Hab.* BOLIVIA; also ECUADOR.

Of somewhat similar coloration to *L. hebe*, Baly, and *L. pulcher*, Baly, but with metallic bluish underside and similarly coloured posterior elytral half, the thorax evenly and closely punctured and the antennæ of different colour. All the specimens contained in my collection seem again to be females, the other sex being apparently much rarer in all cases, but the sexual differences do not seem to be so marked as in other genera.

### *Lamprosphærus angulicollis*, sp. n.

Oblong, dark fulvous, thorax short, black, the sides subangulate, finely and closely punctured, elytra strongly and closely punctate-striate, fulvous, the posterior half black, extreme apex fulvous.

*Var. a.* Head and thorax fulvous.

„ *b.* Like *var. a*, but the elytra entirely black.

Length 3–3½ millim.

Head with a few fine punctures, the basal portion fulvous, the rest blackish, the epistome not separated from the face, antennæ filiform, fulvous, the apical two or three joints more or less black, the third and following joints elongate; thorax very short and transverse, the sides strongly oblique anteriorly and posteriorly, angulate near the base, the anterior angles slightly thickened, the surface very minutely and closely punctured, black, scutellum obscure piceous, elytra with a very shallow depression below the base, closely and rather strongly punctate-striate, the anterior half and the extreme apex fulvous, the rest black; below and the legs fulvous, the sides of the breast obscure piceous.

*Hab.* AMAZONS.

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A rather variable and aberrant species on account of the angulate sides of the thorax, which give it somewhat the appearance of a small *Nodostoma*; I am, however, unable to separate the species generically, as it agrees in all other respects with *Lamprosphærus*. In *Chalcophyma* the thorax is likewise more or less strongly angulate, but the posterior legs are dentate and the elytra are generally costate or tuberculate. The coloration of this insect very nearly agrees with that of *L. hebe*, Baly, but the shape of the thorax is quite different.

### *Lamprosphærus terminatus*, sp. n.

Broadly ovate, piceous below, the head, legs and abdomen obscure fulvous, antennæ fulvous, the seventh, tenth, and eleventh joints black, thorax obscure piceous, minutely punctured, elytra finely punctate-striate, obscure greenish-piceous, the apex fulvous.

Length 3½–4 millim.

*Fem.* Head finely punctured, fulvous, the middle with a blackish spot, clypeus separated from the face by fine grooves, broad, finely punctured, labrum and palpi fulvous, antennæ slender, fulvous, the seventh and the apical two joints black, thorax more than twice as broad as long, the sides strongly rounded, very narrowly margined, not much narrowed in front, the surface very shining, piceous, extremely finely and rather sparingly punctured; scutellum obscure fulvous; elytra very convex, feebly transversely depressed below the base, closely and rather irregularly punctate-striate, piceous, with a metallic greenish gloss, the apex with a transverse pale fulvous band extending a little way upwards along the sides; below piceous, the abdomen (more or less) and the legs partly or entirely fulvous.

*Hab.* AMAZONS.

This is a rather peculiarly coloured species, and not a very typical representative of the genus, inasmuch as the thorax has the anterior margin not at all concave, but rather produced at the middle; its general shape is, however, very strongly transverse and quite distinct from that of the genus *Agbalus*, in which I should otherwise have placed the species.

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## IPHIMEINÆ.

### *Iphimeis fulvicollis*, sp. n.

Below black, the head, basal joints of the antennæ and the thorax fulvous, the latter very minutely punctured: elytra finely semi-punctate-striate, dark violaceous blue.

Length 7 millim.

*Fem.* Broadly ovate, the head with a few extremely minute punctures, reddish fulvous, the middle with a short longitudinal depression, epistome triangular, its anterior edge but slightly concave, the surface very finely punctured, labrum broad, fulvous, antennæ slender, black, the lower three joints fulvous, the third one-half longer than the second joint but shorter than the fourth, terminal joints slightly thickened; thorax twice as broad as long, narrowed anteriorly, the sides rounded; the angles acute, anterior margin concave, posterior one rounded, the surface sparingly and scarcely perceptibly punctured, scutellum dark fulvous; elytra not wider at the base than the thorax, with a very feeble basal depression, finely punctured in irregular rows, the punctures more distinct at the base than posteriorly, where they are somewhat geminate, the apex rather pointed, the shoulders prominent, the entire surface dark bluish; below black, as well as the legs, prosternum widened at the base, the latter truncate, the anterior margin of the episternum concave.

*Hab.* BRAZIL.

I only know a single specimen of this species, distinct from any of its allies by the colour of the head, thorax and underside.

### *Iphimeis bifasciata*, Lefèv.

I am almost certain that this species is a *Colaspoides*, as I possess a specimen which entirely agrees with Lefèvre's description (Rev. et Magas. de Zool. 1875), but in which the thoracic episternum is slightly convex, a character which probably has been overlooked by the author; the coloration of this species is so marked and unlike that of any other species of the genus *Iphimeis* that it cannot be easily mistaken.

This group contains at present nearly thirty genera, and has been separated by Lefèvre from the *Chrysodininæ* with which Chapuis had united them. The characters distinguishing the genera are not always reliable, and are

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often obscure and ill-defined; for example, *Lepronota* and *Teaspes* cannot be structurally separated. Chapuis gives as the distinguishing characters, the strongly tuberculate elytra and deeply channelled tibiæ of the first-named genus; and the pubescence of the upper surface and the simple tibiæ as peculiar to *Teaspes*; but even his type of the latter genus *T. morbillosa* has very distinctly channelled tibiæ, while *T. lugubris*, Lefèv., has impubescent elytra; on the other hand many species of *Lepronota* have smooth elytra and some are pubescent. *Agbalus*, another genus included in this section, is given by Chapuis as having mucronate tibiæ, but this is only the character of the male insect, although the shape of the thorax is rather characteristic and differs from that of most of the other genera.

*Lepronota discoidalis*, sp. n.

Obscure æneous, the antennæ and legs ferruginous, thorax very finely punctured, elytra finely punctate-striate, the disc æneous, the sides broadly ferruginous, femora æneous at the base.

Length 4 millim.

Head remotely and finely punctured, æneous, labrum obscure fulvous, antennæ entirely ferruginous, extending to the middle of the elytra, the terminal joints robust but elongate, thorax nearly twice as broad as long, the sides rounded, the posterior margin broadly rounded at the middle, the surface very minutely and closely punctured; scutellum impunctate, greenish; elytra with a rather deep depression at the sides below the base, finely punctate-striate, the punctures larger at the base, the disc, in shape of a broad posteriorly narrowed band, æneous, the sides and the epipleuræ ferruginous; below and the base of the femora greenish-æneous, the legs ferruginous.

*Hab.* South Brazil, Lagos (my collection).

Distinct from any of its allies by the coloration, but a true *Lepronota*. I possess a single male specimen.

*Agbalus nigroviolaceus*, sp. n.

Black, with a slight violaceous tint, the lower joints of the antennæ fulvous, legs bluish, thorax extremely minutely and closely punctured; elytra with basal depression, not more strongly punctured than the thorax, except within the depression.

*Mas.* Posterior tibiæ with a long projection near the apex, furnished with long fulvous hairs.

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Length 5–5½ millim.

*Mas.* Rather elongate, slightly narrowed posteriorly, the head strongly but remotely punctured, with a shallow central longitudinal groove, epistome wedge-shaped, strongly punctured, its anterior margin nearly straight, antennæ extending to the middle of the elytra, black, the lower five joints fulvous, the third and the following three joints elongate, nearly equal; thorax about one-half broader than long, very strongly narrowed in front, the sides rounded with a narrow reflexed metallic greenish margin, the surface convex, extremely finely and closely punctured throughout, the posterior margin with the median lobe moderately produced; scutellum impunctate, bluish; elytra with a distinct depression below the base, punctured like the thorax, the punctures placed in distant rows, more distinct within the depression; below dark greenish, the tibiæ bluish, the posterior femora rather strongly developed.

*Hab.* AMAZONS.

I know of no other species of *Agbalus* of similar coloration and with such fine punctuation; the male has the characteristic long calcar near the apex of the posterior tibiæ, which are furnished at the same place with long fulvous pubescence; the specimens which I look upon as representing the females of the same species, are shorter and broader, the thorax is more transverse and much less narrowed in front, and the elytra are more strongly punctured, the antennæ are also shorter, and the tibial spur is absent, the colour and the punctuation of the thorax are similar to those of the male.

### *Agbalus bolivianus*, sp. n.

Below æneous, above metallic greenish, basal joints of the antennæ and the legs fulvous, thorax very closely punctate, elytra strongly and closely semi-punctate-striate, tarsi blackish.

Length 4 millim.

Of elongate, parallel shape, the head remotely and strongly punctured, with a deep, central, longitudinal groove, the clypeus punctured like the head, antennæ long and robust, black, the lower four joints fulvous, third and fourth joints equal, terminal joints distinctly thickened; thorax twice as broad as long, of nearly equal width, scarcely narrowed in front, the sides rounded, with a narrow reflexed margin, the surface closely and rather strongly punctured, with numerous smaller punctures intermixed; scutellum broad, impunctate; elytra with a distinct sub-basal depression, more

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strongly punctured than the thorax, the punctures arranged in closely approached semi-regular rows, distinct to the apex, the interstices not raised (but slightly so below the shoulders); legs fulvous, the posterior tibiæ in the male with the usual styliform process; tarsi blackish.

*Hab.* BOLIVIA.

Distinguished from its allies by the comparatively narrow shape, the strong punctuation of the elytra and the dark coloured tarsi.

*Agbalus chiriquensis*, sp. n.

Greenish-æneous, the antennæ and legs fulvous; thorax narrowed in front, extremely minutely punctured, elytra elongate, closely punctate-striate.

*Mas.* Posterior tibiæ with a thorn-like prolongation near the apex.

Length 5 millim.

Head with a few minute punctures and a central longitudinal groove, the epistome wedge-shaped, strongly punctured, labrum fulvous, antennæ long and slender, fulvous, the terminal joints darker; thorax scarcely twice as broad as long, strongly narrowed in front, the anterior margin half the width of the posterior one, the sides feebly rounded, with a very narrow reflexed margin, the angles acute but not produced, the surface finely and remotely punctured, more closely so at the sides, scutellum smooth, its apex pointed; elytra elongate, with a shallow transverse depression at the sides below the shoulders, the disc more strongly punctured than the thorax, the punctures arranged in closely approached regular rows, but nearly obsolete near the apex; legs fulvous; prosternum broad, sparingly punctured.

*Hab.* PANAMA, Chiriqui.

This species has not the ovate general shape nor the strongly transverse thorax of the typical forms, but otherwise agrees with them in structure and in the tibial spur of the male. I possess two male specimens which I received from Dr. Staudinger and Herr Bang-Haas.

*Agbalus subcostatus*, sp. n.

Elongate, greenish or brownish æneous, the basal joints of the antennæ and the legs fulvous, knees and tarsi blackish, thorax closely and finely punctured, elytra strongly subgeminate punctate-striate, the sides with two or three short costæ near the apex.

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*Var.* Metallic blue, the legs piceous.

Length 4 millim.

*Mas.* Head remotely and strongly punctured, with a short central longitudinal groove, the epistome subrugose punctate, its anterior portion rather strongly widened and deflexed, antennæ extending to the middle of the elytra, black, the lower four joints and the base of the fifth fulvous, terminal joints thickened; thorax twice as broad as long, but little narrowed anteriorly, the sides rounded, the angles acute, the surface closely impressed with smaller and larger punctures, which are more crowded at the sides than at the middle, scutellum impunctate; elytra more strongly punctured than the thorax, with a distinct transverse depression below the base, the punctures arranged in more or less distinct double rows, which near the apex become single, the interstices below the shoulders thickened, those below the middle at the sides raised into two or three short costæ; legs fulvous, tarsi black.

*Hab.* BOLIVIA.

Of this species, five specimens, which all seem to be females, are contained in my collection; the subgeminate elytral punctuation, their costate outer interstices and the fulvous legs and black tarsi will help to distinguish the species; of the blue variety one specimen is before me which does not differ except in coloration.

### *Agbalus strigicollis*, sp. n.

Below obscure æneous, above purplish or metallic blue, basal joints of the antennæ fulvous, thorax extremely finely and closely punctured, the sides finely strigose, elytra finely and very closely punctate-striate.

*Mas.* The posterior tibiæ with a short pubescent tooth near the apex.

Length 5 millim.

Head very closely punctured, the vertex finely longitudinally strigose, clypeus separated from the face by fine oblique grooves, punctured like the head, labrum and palpi fulvous, antennæ extending beyond the base of the elytra, fulvous, the apical four joints black, distinctly thickened; thorax proportionately long, scarcely twice broader than long, the sides feebly rounded, with a narrow reflexed margin, the anterior angles produced but not pointed, the disc transversely convex, very finely and closely punctured, the sides with some fine strigæ, the interstices with still more fine punctures, scutellum broader than long, with a few punctures;

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elytra with a very feeble depression below the base, the shoulders prominent, the surface very finely and closely punctate-striate near the suture, the sides more strongly punctured and slightly rugose below the shoulders; below finely pubescent, the legs dark fulvous with a more or less æneous gloss.

*Hab.* R. ARGENTINE.

Of this species I have received several specimens from Mons. Clavareau labelled with the locality given above. The description is that of the male which is of purplish colour above, and differs from any other *Agbalus* in the sculpturing of the thorax and the fine and close punctuation of the elytra, also in having the posterior tibiæ with a short tooth only, instead of a longer spine. The female does not differ except in the absence of the tibial tooth and in the blue colour of the upper surface.

*Coytiera ænea*, sp. n.

Obscure æneous, the antennæ and legs testaceous, thorax very minutely and closely punctured, elytra much more strongly punctured, the punctures semi-regularly arranged near the suture only, the interstices transversely wrinkled.

Length 5 millim.

Of elongate, parallel shape and of pale æneous, subopaque coloration, the head very finely and sparingly punctured, clypeus separated from the face by a triangular groove, more strongly punctured, its anterior edge deeply triangularly emarginate, labrum flavous, antennæ slender and filiform, pale fulvous or testaceous, third and fourth joints equal, elongate, terminal joints slightly thickened; thorax nearly twice as broad as long, the sides slightly narrowed towards the apex, with a comparatively broad reflexed margin, the posterior margin slightly but broadly produced at the middle, the surface rather opaque, very minutely punctured, the punctures of greenish colour, scutellum broadly ovate, with some punctures; elytra strongly and closely punctured, the punctures arranged in indistinct rows near the suture, very irregularly on the rest of the disc, the interstices irregularly wrinkled and longitudinally costate at the apex, the shoulders prominent, followed by a feeble longitudinal ridge which extends nearly to the apex; below piceous with a bluish or æneous lustre, the legs testaceous, the prosternum rather broad, slightly narrowed medially, its apex truncate, mesosternum transversely raised; anterior margin of thoracic episternum concave.

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*Hab.* COLOMBIA (*Pehlke*), Mus. Stettin and my collection.

This insect does not resemble much the type of the genus—*C. marginicollis*, Lef., which is a highly metallic species of much larger size and somewhat differently-shaped thorax, but I cannot find a better place for it. *Euphrytus*, Jac., bears a much stronger resemblance to it, but differs in the strongly narrowed prosternum, which in *C. ænea* is broad; in *Tymnes*, which is of similar shape, the anterior margin of the thoracic episternum is convex.

## COLASPINÆ.

A fairly well-marked group, principally distinguished by the dentate or angulate sides of the thorax, the filiform antennæ and (with one exception) entire tibiæ. Lefèvre places 23 genera in this group. Of these the genus *Colaspis* contains most species, being numerously represented in South and Central America; a good monograph of this genus is much needed, as it contains nearly 200 species, often extremely closely allied and variable. From *Colaspis* the genus *Rhabdopterus* may be known by the wider thorax, which gives the insect a different appearance, the prosternum is also much broader and less constricted at the middle, and the sides of the thorax are never dentate. *Metaxyonycha* is often more difficult to separate from *Colaspis*, but has the intermediate tibiæ more or less emarginate at the apex and the thorax of more equal width.

### *Metaxyonycha bogotensis*, sp. n.

Reddish fulvous, antennæ (the lower two or three joints excepted) black, thorax bidentate at the sides, deeply transversely foveolate and punctured, elytra metallic green, very strongly and closely semi-rugose punctate, a transverse band at the middle, the lateral margins and the apex fulvous.

Length 10–12 millim.

*Fem.* Head strongly punctured between the eyes, antennæ slender, black, the lower two or three joints fulvous; thorax twice as broad as long, the sides obsoletely biangulate at the middle, the disc with a transverse depression at each side, strongly and irregularly punctured, more closely so within the depressions, scutellum fulvous;



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From several similarly coloured species (*M. chlorospilota*, Marsh., *M. godmani*, Jac., *M. hirsuta*, Jac.), the present insect differs in the very strongly rugose, almost verrucose, lateral portion of the elytra, and the shape and position of the elytral green spots; the first of these or the one placed on the shoulders is not round but elongate and of an oblique sutural direction, and the posterior spot is placed at a greater distance from the apex than is generally the case in the allied species. I received three specimens from the late Mr. Flohr, too late for the publication of the species in the Biologia Centr. Americana.

*Metaxyonycha fasciata*, Lefèv. (Rev. et Mag. de Zool. 1875).

This species was described by Baly again as *M. pulchella* (Trans. Ent. Soc. Lond. 1881); neither Lefèvre nor Baly mentions which sex he was describing. Lefèvre had evidently female specimens before him, as he describes the elytra as costate, but does not mention any impressions of the thorax, on account of which Baly looked upon his *M. pulchella* as distinct, but this depression is not always equally well marked, or perhaps Lefèvre forgot to mention it. I have now both sexes before me, the male from Venezuela; in this sex, the costæ of the elytra are only slightly visible, and the fulvous band which divides the metallic green patches is slightly widened at the suture. Other differences of importance, making allowance for those of sex, I cannot find.

*Metaxyonycha batesi*, Baly.

*M. formosa*, Lef., agrees in every detail with this species. Neither author mentions the sex, nor does Lefèvre compare his species with that of Baly, which was described two years before his own; he simply says that it differs from his *M. fasciata* in the absence of the elytral costæ, besides the colour of the tibiæ and tarsi, but it does not seem to have struck him that elytral costæ are generally peculiar to the female sex in this genus, but not always, which makes it all the more necessary to state which sex the author is describing.

*Aracyntha thoracica*, sp. n.

Rufous, the antennæ, tibiæ and tarsi black, thorax with purplish gloss, remotely punctured, elytra metallic green or blue, strongly geminate-punctate-striate, the interstices longitudinally costate.

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Length 9 millim.

*Fem.* Head with a distinct purplish gloss, remotely punctured, with a central longitudinal groove, clypeus separated from the face by a deep transverse groove, finely punctured, antennæ extending below the middle of the elytra, black, all the joints with the exception of the basal two, elongate; thorax more than twice as broad as long, the sides strongly rounded and obsoletely bisinuate, narrowly marginate, the surface rufous and with a distinct purplish gloss, irregularly and rather remotely punctured, the punctures shallow; scutellum fulvous; elytra with strong double rows of punctures, the interstices longitudinally costate throughout; below fulvous, the legs darker, the tibiæ and tarsi black, the latter elongate, the tibiæ deeply sulcate, the intermediate ones emarginate at the apex.

*Hab.* BRAZIL, Espiritu Santo.

This species is very closely allied to the well-known *A. tricolor*, Perty, and of exactly the same coloration, but differs in the shape of the thorax, which is much shorter, more transverse, and has the sides much more strongly rounded than in the allied species, there is also a very strongly-pronounced purplish gloss, absent in its ally. I only know the female of this species, which is of smaller size than *A. tricolor*.

### *Colaspis perplexa*, sp. n.

Elongate, æneous, the antennæ fulvous, thorax bidentate near the base, closely and finely punctured, elytra very closely punctate-striate.

Length 8 millim.

*Mas.* Head very closely and rather finely punctured, clypeus as closely and more strongly punctured, labrum fulvous, antennæ slender, fulvous, the third joint slightly shorter than the fourth; thorax scarcely twice as broad as long, the sides rounded, bidentate near the base, the surface very closely and finely punctured, with a small depression at each side; elytral punctuation scarcely stronger than that of the thorax, except at the sides, the punctures arranged in very closely approached rows, the interstices not rugose, the base with a rather distinct transverse depression; below and the legs piceous with a distinct æneous or metallic green lustre; prosternum elongate, narrowed between the coxæ.

*Hab.* VENEZUELA.

*C. perplexa* differs from *C. nobilitata*, Lef., and *C. egena*,

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Lef., in the dark æneous general colour and that of the legs, in the closely punctured head, and other details; the comparatively large size, fulvous antennæ and the closely-approached rows of punctures, which are slightly geminate near the suture, will help to separate the species from any others nearly similarly coloured.

*Colaspis corrugata*, sp. n.

Obscure fulvous or fuscous with more or less metallic green lustre, the antennæ flavous, thorax biangulate at the sides, the surface strongly and deeply punctured, the interstices corrugate and convex, elytra similarly sculptured, with three or four interrupted longitudinal costæ, legs fulvous.

Length 3 millim.

*Mas.* Head closely, very deeply and coarsely punctured, the interstices rugose, clypeus sculptured in the same way, its anterior edge straight, the apical portion as well as the labrum fulvous, antennæ flavous, extending below the middle of the elytra, the terminal joints thickened; thorax rather more than twice as broad as long, the sides strongly angulate at the middle, sinuate below the latter, the entire surface with strongly raised, irregular shaped rugosities, the interstices everywhere deeply punctured, the sides with a broad but shallow depression; elytra with about eight more or less distinct and interrupted longitudinal costæ, the interstices deeply punctured and strongly transversely rugose; below and the legs fulvous with a slight æneous gloss.

*Hab.* PERNAMBUCO.

This is one of the most deeply and strongly-sculptured species, and closely allied to *C. sulcata*, Lef., the latter insect is, however, larger, the antennæ are differently coloured, and the sculpturing of the thorax is less strongly marked; the general coloration of *C. corrugata* is more or less fulvous with brassy-green reflections above. The term "corrugate" expresses best the rough upper surface of the insect, and the name *C. corrugata* was given to it by the late Lefèvre, who had the specimen for examination but did not publish a description of it.

*Colaspis elegans*, sp. n.

Below metallic blue, above violaceous, basal joints of the antennæ and the legs fulvous, thorax biangulate at the sides, evenly and closely punctured, elytra geminate-punctate-striate.

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*Colaspis batesi*, sp. n.

Below ferruginous, antennæ (the basal joints excepted) black, above metallic violaceous, thorax biangulate, remotely and strongly punctured, biimpressed, elytra remotely, subgeminate punctate-striate.

Length 7 millim.

*Fem.* Of broadly ovate, convex shape, the head with a deep longitudinal central groove, very strongly punctured between the eyes, the vertex nearly impunctate, clypeus transverse, closely punctured at the middle, labrum and palpi fulvous, antennæ rather short and stout, black, the lower four joints fulvous, terminal joints slightly widened; thorax twice as broad as long, the sides strongly rounded, biangulate at the middle, the upper angle rather obsolete, the surface with a deep fovea at each side, very sparingly punctured at the middle of the disc, more strongly and closely so at the sides, scutellum transverse, impunctate; elytra with a feeble depression below the base, not more strongly punctured than the thorax, the punctures arranged in distant, somewhat geminate, rows, the punctures themselves likewise widely separated; below and the legs ferruginous, the breast with a purplish gloss.

*Hab.* AMAZONS.

From other similarly coloured species, the present one is separated by the black terminal joints of the antennæ, the remote punctuation of the thorax and of the elytra, in connection with the colour of the underside. The male is unknown to me.

*Colaspis imitans*, sp. n.

*Mas.* Metallic greenish below, above dark violaceous, the basal and apical joints of the antennæ and the legs flavous, head and thorax greenish, finely punctured, sides of the latter angulate at the middle, elytra finely punctured in regular rows, the interstices flat.

*Fem.* Much larger, the thorax with two foveæ laterally.

Length 10 millim.

*Mas.* Head very closely and distinctly punctured, with a central longitudinal groove, the clypeus likewise very closely punctate, labrum fulvous, palpi flavous, antennæ extending below the middle of the elytra, black, the basal four and the apical two joints flavous; thorax scarcely twice as broad as long, the lateral margins angulate at the middle, the angles acute, dentiform, the surface remotely and distinctly but not strongly punctured, of dark greenish colour, the sides sometimes impressed with a round fovea, scutellum greenish, smooth;

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the punctures not stronger than those of the thorax and arranged in regular not very closely approached rows, distinct to the apex; below metallic greenish, legs pale flavous.

*Hab.* PERU; BOLIVIA; AMAZONS; COLOMBIA.

I must separate this species, of which both sexes are before me, from *C. cœlestina*, Erichs., on account of the different colour of the antennæ, and from *C. lacordairei*, Lef., on account of the fine punctuation of the thorax and elytra, which is the same in all the specimens before me. The Colombian specimen has a blackish violaceous thorax and elytra, but does not differ otherwise. *C. sulphuripes*, Lef., has black antennæ with the basal three joints brownish only, the colour of the underside differs, and the abdomen is clothed with fulvous hairs. The difference in size between the two sexes is very great and the thorax of the female is much more transverse and with a fovea at each side.

### *Colaspis amazonæ*, sp. n.

Below bright metallic green, above greenish cupreous, the basal joints of the antennæ, the base of the femora and the tibiæ and tarsi, fulvous, thorax angulate at the middle, confluently and strongly punctured, elytra deeply and closely punctured, the interstices transversely rugose and strongly longitudinally costate at the apex.

Length 5 millim.

*Mas.* Head metallic green, the vertex cupreous and strongly punctured, with a deep central longitudinal grove, clypeus with a deep fovea at the base, impunctate, labrum fulvous, antennæ extending below the middle of the elytra, fuscous, the lower five joints fulvous; thorax about one-half broader than long, the sides angulate at the middle, the angles produced, the surface deeply and confluently punctured, the interstices raised and smooth; the punctures extending to the lateral margins, scutellum smooth, elytra wider at the base than the thorax, nearly similarly punctured, the punctures arranged in irregular double rows near the suture and at the sides where they are also larger, the interstices at the latter place, strongly transversely rugose, those at the posterior half of the elytra strongly longitudinally costate; legs slender, the base of the femora fulvous, the posterior portion metallic green, the tibiæ fulvous as well as the tarsi, the first joint of the latter very elongate; the flanks of the thorax as well as the rest of the underside impunctate, metallic green.

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*Hab.* AMAZONS.

Closely allied to *C. inquinata*, Lef. (according to Lefèvre, who examined the insect), but the elytra without any basal depression, and the femora metallic green, not blackish at their posterior half.

*Colaspis venezuelæ*, sp. n.

Fulvous below, the antennæ (the basal joints excepted) and the apex of the posterior femora blackish, above metallic green, thorax angulate at the middle, very closely and rather strongly punctured, elytra deeply and irregularly punctured, the interstices everywhere strongly transversely rugose, costate at the apex.

Length 4 millim.

*Mas.* Head strongly and rather closely punctured, metallic-green, clypeus of similar sculpture at the base, nearly impunctate anteriorly, its anterior edge nearly straight, labrum fulvous, palpi pale fulvous, the terminal joint piceous, antennæ black (the last three joints wanting), the lower three or four joints fulvous below; thorax one-half broader than long, the sides angulate at the middle, the surface very closely and evenly punctured, the middle of the disc with a narrow less closely punctured space; elytra with strongly raised transverse rugosities throughout, the interstices deeply punctured, the punctures forming two more regular rows near the suture, the interstices near the apex longitudinally costate; below and the legs fulvous, the apex of the posterior femora black; flanks of the thorax strongly punctured.

*Hab.* VENEZUELA, Ceara.

This species seems still more closely allied to *C. inquinata* than the preceding one, on account of the fulvous underside, which, however, is without metallic gloss. The closely and evenly punctured thorax will, however, at once distinguish the insect from the last-named species. *C. anceps*, Lef., has a distinct elytral depression and quite a different sculpture.

*Colaspis porosa*, sp. n.

Oblong-ovate, black, with a slight violaceous tint, the head and thorax fulvous, very finely and closely punctured, elytra extremely closely and strongly punctured, the interstices finely wrinkled or reticulate.

Length 5½ millim.

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similarly punctured, palpi and antennæ black, the joints rather strongly widened (the apical two wanting); thorax nearly twice as broad as long, the angles acute, produced, the sides distinctly bidentate at the middle, crowded with round punctures, the middle of the disc much more sparingly punctured, scutellum black; elytra very dark violaceous, strongly and extremely closely punctured, the interstices everywhere reticulate, especially near the apex, the suture at the latter place accompanied by two more or less distinct costæ; below and the legs black, the first joint of the posterior tarsi as long as the following two joints together, the flanks of the thorax closely punctured, prosternum strongly widened at the base.

*Hab.* PERU.

The colour of the head and thorax and that of the elytra in connection with the porous appearance of the latter parts will easily distinguish this species.

*Colaspis multicostata*, sp. n.

Black, the head and thorax metallic cupreous, distinctly punctured, sides of the latter biangulate, elytra black, very strongly longitudinally costate, the interstices strongly punctured.

Length 6 millim.

*Fem.* Head remotely but strongly punctured, reddish cupreous, margined with metallic green, clypeus transversely subquadrate, deeply punctured at the base, its anterior edge bidentate, labrum black, palpi fulvous, the apical joint black, antennæ extending slightly beyond the middle of the elytra, black, the basal four joints fulvous; thorax rather more than twice as broad as long, rather convex, the sides biangulate at the middle, the surface strongly and closely punctured at the sides, more finely and remotely so at the middle, bright metallic cupreous; elytra with eight very acutely raised longitudinal costæ on each, transversely depressed below the base, the legs dark piceous.

*Hab.* BRAZIL, St. Paulo.

The cupreous colour of the head and thorax, the black elytra and their strongly raised costæ will distinguish this species at first sight. I only know a single, apparently female, specimen, contained in my collection.

*Colaspis viridipunctata*, sp. n.

Below æneous, above obscure fuscous, the interior of the punctures green or bluish, antennæ and femora fulvous, tibiæ and tarsi flavous,

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thorax biangulate at the sides, strongly and closely punctured, elytra very closely and rather irregularly punctured, the punctures not stronger than those of the thorax.

Length 7 millim.

*Mas.* Head very closely and rather strongly punctured, with a deep longitudinal, central groove, clypeus punctured like the head, labrum and palpi flavous, antennæ entirely fulvous, extending below the middle of the elytra; thorax scarcely twice as broad as long, rather long, the sides biangulate at the middle, the surface closely but unevenly punctured, the interstices rather convex, the sides with a small fovea; elytral punctuation arranged in very closely approached semi-regular rows, the apex more closely and irregularly punctured, the sides with a narrow longitudinal costa, more distinct below the middle; below greenish-æneous, impunctate.

*Hab.* AMAZONS.

The nearest allied species to the present one seem to be *C. pruinosa*, Lef., and *C. æraria*, Lef., but in both these insects the elytral punctuation is still much more closely placed, so that the interstices are not larger than the punctures, in *C. viridipunctata* on the other hand, the punctures are arranged in rows, although very closely so, and the interstices are smooth and larger than the punctures; the general coloration is a sombre brownish fuscous, but the interior of the punctures is greenish or blue; the tibiæ and tarsi are paler than the femora; the female does not differ in these respects.

### *Colaspis colombica*, sp. n.

Obscure dark æneous, thorax closely and strongly punctured at the sides, the latter angulate at the middle, elytra strongly geminate punctate-striate, the interstices at the apex longitudinally costate.

Length 4–4½ millim.

Head extremely closely and strongly punctured, the labrum dark fulvous, antennæ scarcely extending to the middle of the elytra, black, the basal joints stained more or less with flavous below, terminal joints distinctly thickened; thorax twice as broad as long, the sides angulate at the middle, the disc very deeply and closely punctured at the sides, the latter sometimes with a depression, the middle of the disc with a more or less smooth, longitudinal narrow space; elytra more strongly punctured than the thorax, the punctures arranged in double rows near the suture, those at the sides more irregularly so, the interstices near the apex strongly longitudinally costate.

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*Hab.* COLOMBIA (*Pehlke*), Mus. Stettin and my collection.

The general colour of this species is a very dark, almost blackish-green æneous, in which it resembles *C. strigosa*, Lef., and several other species, it is however of rather small size, the antennæ and legs are likewise dark, and the elytral punctuation is distinctly geminate near the suture, the interstices however are only costate near the apex. There seems to be no difference of importance between the sexes.

*Colaspis amabilis*, sp. n.

Metallic green, the basal joints of the antennæ and the legs pale fulvous, thorax closely and finely punctured, angulate at the sides, elytra finely semi-geminate punctate near the suture, more strongly and irregularly so at the sides, the interstices at the latter place transversely rugose.

Length 5 millim.

*Mas.* Head rather closely punctured, metallic green with purplish or cupreous stains, the space between the eyes with a deep transverse groove, clypeus triangular, closely punctured, labrum obscure fulvous, palpi flavous, the apical joint piceous, antennæ piceous, the basal four or five joints fulvous below, the first joint metallic green above; thorax with the sides angulate at the middle, the anterior angles thickened and tuberculate, the disc punctured like the thorax, the punctures rather fine but deep and closely placed, the interstices scarcely raised; elytra with a transverse depression below the base, the punctures near the suture not stronger than those of the thorax and placed in not very distinct double rows, but singly near the apex, those at the sides much stronger and more irregularly placed, the interstices transversely rugose at the same place; legs fulvous, the posterior femora with a more or less metallic green gloss, the extreme apex of the tibiæ and the tarsi piceous.

*Hab.* BOLIVIA.

One of the smaller-sized species and principally distinguished by the rather evenly and not very strongly punctured thorax with the interstices not raised, also by the smooth appearance of the elytra near the suture, where the punctures are fine and placed in double rows. *C. geniculata*, Lef., has a widely punctured thorax and rounded or semi-rounded lateral margins according to the description, the knees are also described as piceous and the colour of the upper surface as bright cupreous. *C.*

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*densicollis*, Lef., differs in having a very densely, minutely and aciculately punctured thorax.

*Colaspis ornatipennis*, sp. n.

Below black, the head and thorax fulvous, the latter closely punctured and strongly angulate at the sides, elytra flavous, strongly punctured, the sutural and lateral margins, a large basal spot, an elongate, medially narrowed discoidal stripe and a short transverse band near the apex, violaceous black, legs flavous.

Length 5½ millim.

*Mas.* Head convex, finely punctured above the eyes, with a short central groove, epistome sparingly punctured, bounded above by two strongly raised callosities, antennæ extending to the middle of the elytra, black, the apical two joints fulvous; thorax scarcely twice as broad as long, the sides with a single tooth at the middle, the surface fulvous, finely and closely punctured at the sides, sparingly so at the disc, scutellum black; elytra not depressed below the base, punctate-striate near the suture, the sides much more strongly and more irregularly punctured, the punctures much finer and more single near the apex, the surface flavous, the sutural margin narrowly (except at the base) and the lateral ones more broadly black, a rather large rounded spot on the shoulder, an elongate, medially narrowed short band below the middle and a narrow transverse short band near the apex bluish-black; legs flavous, the femora streaked with black above.

*Hab.* PERU.

This is a well-marked species of which four specimens are contained in my collection, it seems allied to *C. picta*, Lef., but is black below and has but three, not four, elytral spots, which are also differently placed; the female does not differ in any marked degree.

*Colaspis* (?) *heteroclita*, sp. n.

Metallic greenish with cupreous gloss, the antennæ (the basal joints excepted) and the tibiæ and tarsi blackish, thorax with rounded sides, convex, rugosely punctured, elytra nearly similarly sculptured.

*Mas.* Elytral punctuation close and semi-regular, the interstices transversely wrinkled.

*Fem.* Elytra with the interstices strongly longitudinally costate, the costæ abbreviated posteriorly.

Length 5 millim.

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Head closely rugose punctate as well as the clypeus, the latter bounded above by the usual smooth, metallic callosities, eyes large, antennæ slender, longer than half the length of the body, black, the lower four joints fulvous, the third joint slightly shorter than the fourth, terminal joints somewhat widened; thorax of somewhat subcylindrical shape, not more than one-half wider than long, the sides rounded at the sides, very little narrowed anteriorly and posteriorly, the surface extremely closely impressed with round and strong punctures, the interstices finely rugose, metallic green, with a slight cupreous reflection; elytra oblong, wider at the base than the thorax, more strongly punctured, the punctures more regularly placed in rows although not to any marked degree, the interstices finely wrinkled; below more bluish in colour, the tibiæ and tarsi piceous, the anterior ones in the male triangularly dilated.

*Hab.* Rio Janeiro.

It is very probable that this insect is the representative of a new genus very closely allied to *Colaspis*, of which it has nearly all the structural characters except that of the thorax. This part is of a much more convex, narrow and subcylindrical shape than in any other species of the genus, and the sides are devoid of teeth or angles, in the male at least; in the female an obsolete angle is visible at the middle however, and the thorax is slightly broader. The insect likewise greatly puzzled the late Lefèvre, who placed it doubtfully in *Colaspis* and gave it (*in litt.*) the name I have retained. The female differs greatly by the strongly raised costæ of the elytra, but scarcely in any other way.

*Rhabdopterus peruensis*, sp. n.

Ovate, broad, black, the basal joints of the antennæ fulvous, thorax sparingly and finely punctured, elytra strongly subgeminate punctate-striate, the interstices longitudinally costate, strongly so at the apex.

Length 7 millim.

*Mas.* Of rather broad and robust shape, black, without metallic gloss, the head finely and closely punctured at the vertex, the middle and the clypeus rather more strongly punctured, antennæ extending to the middle of the elytra, black, the basal three or four joints more or less fulvous below; thorax twice as broad as long, slightly widened at the middle, the sides straight at the base, subangulate before the middle and from thence narrowed towards the apex, with a narrow reflexed margin, anterior angles acutely pointed, the surface convex, remotely and finely punctured; elytra narrowed at the apex, with a

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feeble transverse depression below the base, strongly punctured in irregular double rows, the interstices (especially at the base, sides and apex) longitudinally convex ; below and the legs black, shining, the intermediate tibiæ slightly curved, strongly sulcate, the first joint of the anterior tarsi strongly dilated ; prosternum broad, its surface concave, nearly smooth.

*Hab.* PERU.

The thorax in this species has the sides almost entire, a slight angulation only being visible before the middle. This, the general black colour and that of the antennæ and the convex elytral interstices distinguish the species from its allies. The female does not differ except in the normal not dilated anterior tarsi.

*Rhabdopterus imitans*, sp. n.

Broad and robust, black, thorax irregularly and strongly punctured, the interstices rugose, elytra deeply punctate-striate, the interstices strongly longitudinally costate, the sides rugosely punctured.

Length 7 millim.

*Mas.* At first sight this species may be taken for the female of the preceding species, but as I have both sexes of that insect before me, there can be no doubt about the present one representing another species. The differences are as follows :—the general colour is not of such a pronounced black but has a slight cupreous or purplish tint, the second and third joints of the antennæ are shorter, the punctuation of the thorax is quite different, strong, irregular and with raised or rugose interstices at the sides ; the elytra have only single rows of punctures, occasionally doubled, irregular and closely placed at the sides, and the interstices are more strongly costate. In all other respects the species agrees with the preceding one. I possess two exactly similar specimens.

*Hab.* PERU.

*Rhabdopterus colombiensis*, sp. n.

Dark æneous, the antennæ flavous, the seventh and the apical two joints piceous, thorax subangulate at the sides, remotely and not very strongly punctured, elytra more strongly and closely punctate-striate, the interstices longitudinally costate at the apex, legs obscure piceous.

Length 6 millim.

*Mas.* Head finely and somewhat closely punctured, the clypeus separated from the face, similarly sculptured, labrum fulvous, antennæ extending beyond the middle of the elytra, flavous, the seventh and

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anteriorly, the sides subangulate at the middle, obliquely narrowed anteriorly, the angles slightly produced outwards, the disc remotely and not very strongly punctured, the sides more closely punctate, the interstices with some very fine punctures, scutellum impunctate; elytra scarcely perceptibly depressed below the base, rather more strongly punctured than the thorax, the punctures arranged in closely approached, fairly regular rows, the punctures scarcely stronger at the sides, the interstices at the apex costate; intermediate tibiæ slightly curved; the male organ is slender and strongly curved, the apex is produced into a long point of lanceolate shape, the under surface very slightly sulcate.

*Hab.* COLOMBIA.

The principal character which distinguishes this species from its allies is the remotely punctured thorax, the closely arranged rows of punctures of the elytra, which have the sides scarcely differently sculptured, in connection with the colour of the antennæ and the dark æneous general colour; I cannot find any other species described to which these details apply; several specimens are contained in my collection, others I received for examination from M. Clavareau.

The following species described here are all of small size, and have lost much of the shape of the more robust and typical forms, agreeing in that respect with *R. erosulus*, Lef., of which I possess typical specimens; the thorax in these species is short, transverse, and the sides are obliquely narrowed anteriorly and more or less angulate near the base; there is no reason to separate them generically from *Rhabdopterus*, as intermediate stages occur; which again proves the difficulty of classification in the exotic species of *Eumolpidæ*. By drawing attention, however, to this divergence of shape, the determination of the species will be assisted.

### *Rhabdopterus apicicornis*, sp. n.

Piceous with metallic cupreous gloss, the basal joints of the antennæ and the legs fulvous, thorax finely and irregularly punctured, subangulate at the middle, elytra strongly and semi-regularly punctured anteriorly, with basal depression, the interstices longitudinally costate at the apex, tarsi piceous.

Length 5 millim.

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*Mas.* Head very finely punctured at the vertex, the latter shining, with purplish reflections, clypeus separated by a more rugosely punctured space, its surface sparingly punctured, labrum and palpi fulvous, antennæ with the apical five joints black, the others fulvous; thorax twice as broad as long, the sides straight at the base, subangulate at the middle, narrowed towards the apex, the surface finely, irregularly and not very closely punctured, the interstices with some finer punctures, æneous, the lateral margins narrowly metallic green; elytra with a small but distinct depression below the base, obscure cupreous, rather finely punctate-striate near the suture, much more strongly and irregularly so at the sides, the interstices at the apex as usual costate; below piceous, the breast metallic greenish, legs fulvous, the tarsi nearly black, the anterior tibiæ curved.

*Hab.* VENEZUELA.

In the semi-cupreous colour of the upper surface this species seems to agree with *R. cuprinus*, Lef., likewise from Venezuela, but differs in having no intermediate dark joints of the antennæ, the thorax also is finely, not strongly and confluently punctured as in Lefèvre's species, which is also a larger insect. I only know the male sex.

### *Rhabdopterus amazonicus*, sp. n.

Dark æneous, the labrum and the basal joints of the antennæ fulvous, thorax angulate at the sides, closely and finely punctured, elytra with basal depression, more strongly punctate-striate, the striæ remotely placed, the interstices at the apex costate.

Length 4 millim.

*Mas.* Of short and broadly ovate shape, the head sparingly and remotely punctured, the base of the clypeus and the space near the eyes with some stronger punctures, antennæ extending beyond the middle of the elytra, the basal four and the eighth and ninth joints fulvous, the others black; thorax twice and a half broader than long, the sides angulate before the middle, from there to the base straight, the surface finely and rather closely punctured, but rather more remotely so at the middle than at the sides, the interstices with some still finer punctures, the extreme lateral margins metallic greenish; elytra with prominent shoulders and with a transverse depression below the base, rather finely and remotely punctate-striate, the interstices near the apex moderately costate; below of a more piceous colour, the legs nearly black.

*Hab.* AMAZONS.



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Amongst the smaller species of the genus, *R. amazonicus* is distinguished by the coloration of the antennæ, the fine and close punctuation of the thorax, and the remote striæ of the elytra; the female does not differ except in the more transversely shaped thorax.

*Rhabdopterus apicipes*, sp. n.

Dark æneous, the basal joints of the antennæ fulvous, thorax short, strongly dentate at the sides, rather finely and closely punctured, elytra with basal depression, rather finely and remotely punctate-striate, legs fulvous, the apex of the tibiæ and the tarsi piceous.

Length 4 millim.

Head remotely and finely punctured at the vertex, the latter convex, epistome transverse, more strongly punctured, separated from the face by a few strong punctures, labrum fulvous, antennæ rather long, black, the lower four or five joints pale fulvous; thorax more than twice as broad as long, the sides strongly widened at the middle, with a very distinct tooth, sinuate in front of the latter, anterior angles dentiform, the surface rather finely and closely punctured, the interstices with some very minute punctures, not raised; elytra with a distinct depression below the base, scarcely more strongly punctured than the thorax, except within the depression and at the sides anteriorly, the interstices flat, scarcely raised even at the apex; legs fulvous, the femora with a slight æneous gloss, the apex of the tibiæ and the tarsi more or less piceous.

*Hab.* PERU.

One of the smaller-sized species, to be separated from most of its allies by the colour of the antennæ, the comparatively finely punctured thorax and elytra, the absence of the rugosities of the latter, the tooth at the sides of the thorax and the colour of the legs. Two specimens before me seem to represent the female sex only.

*Rhabdopterus abdominalis*, sp. n.

Below obscure piceous, the legs and abdomen fulvous, above greenish-æneous, thorax finely and closely punctured, subangulate near the base, elytra elongate, finely and semi-regularly punctured near the suture, more irregularly and strongly so at the sides, apical joints of the antennæ piceous, tarsi bluish black.

Length 4 millim.

*Mas.* Head metallic greenish, minutely granulate and finely and sparingly punctured, with a longitudinal central grove, eyes large,

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clypeus triangular, more strongly and closely punctured, labrum and palpi fulvous, antennæ long and slender, fulvous, the basal joint stained with metallic green above, terminal joints piceous; thorax about twice and a half broader than long, the sides obliquely narrowed in front, subangulate near the base, with a narrow reflexed margin, the surface very minutely granulate, greenish-æneous, finely and irregularly punctured, the punctures arranged in batches at the sides and at the disc; elytra elongate, slightly narrowed posteriorly, with a distinct transverse depression below the base, more strongly punctured than the thorax, the punctures arranged in three or four more or less regular rows near the suture, much more irregularly so at the sides, the interstices at the latter place transversely rugose, those near the apex longitudinally costate; below and the legs more or less fulvous, the breast with metallic green gloss, tarsi dark bluish.

*Hab.* AMAZONS.

I have retained the specific name given to this species by Lefèvre, who compared the insect with his types; *R. abdominalis* belongs to the group of smaller-sized species, having an anteriorly strongly narrowed thorax with angulate sides; the fulvous antennæ, which have the terminal joints only darker, and the fulvous abdomen and legs principally distinguish this species. Two apparently male specimens are before me.

### *Rhabdopterus venezuelensis*, sp. n.

Obscure fulvous with a strong metallic green lustre, antennæ with the seventh joint piceous, head and thorax very closely punctured, sides of the latter obscurely angulate at the middle, elytra more or less fulvous, with closely approached semi-regular rows of punctures, the interstices scarcely wrinkled.

*Fem.* The sides of the elytra with two more or less distinct costæ.

Length 4 millim.

Head and clypeus very closely and distinctly punctured, more or less metallic green, labrum and palpi fulvous, antennæ comparatively short, fulvous, the seventh joint fuscous, basal joint short and stout, second and third rather short, the terminal joints elongate and thickened; thorax twice as broad as long, the sides rounded, scarcely perceptibly angulate at the middle, with a narrow reflexed margin, scarcely narrowed anteriorly, the surface extremely closely and rather finely punctured, the punctuation somewhat unevenly distributed, the interstices slightly wrinkled, metallic greenish;

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elytra elongate, narrowed posteriorly, with a feeble depression below the base, the punctuation a little larger than that of the thorax and arranged in irregular closely approached rows which become nearly indistinct at the apex, the interstices not raised or convex; legs short and stout, the tibiæ at the apex and the first joint of the anterior tarsi strongly dilated in the male, fulvous. In the female the shoulders are raised into an acute costa which gradually is broken up into small tubercles, this is followed by another longer costa near the lateral margins; prosternum broad, subquadrate.

*Hab.* VENEZUELA.

This is a somewhat aberrant species, resembling in the fulvous colour, stained more or less with metallic green, the preceding species, but the shape of the thorax is quite different, not being narrowed anteriorly and very slightly angulate, the surface also is very closely punctured and the elytral punctuation is not so uneven and broken as in so many species, the antennæ have only the seventh joint darkened and are less elongate than is usually the case; the female only differs in the elytral costæ.

*Rhabdopterus fulvicollis*, sp. n.

Fulvous, the seventh and the apical two joints of the antennæ piceous, thorax remotely and extremely minutely punctured, elytra metallic blue, closely and strongly punctured, the base with a transverse depression.

Length 4 millim.

*Fem.* Of oblong shape, the head fulvous, with a few minute punctures and a shallow central longitudinal groove, clypeus bounded above and at the sides by distinct, oblique grooves, its surface nearly impunctate, antennæ long and slender, fulvous, the seventh and the apical two joints piceous; thorax more than twice as broad as long, strongly narrowed anteriorly, the sides oblique, with a narrow reflexed margin, the surface with a few scarcely perceptible punctures, scutellum piceous; elytra with a distinct transverse depression below the base, closely and strongly punctured, the punctures arranged in somewhat irregular rows, the interstices slightly rugose at the sides, metallic blue or greenish with a slight purplish gloss; below and the legs fulvous.

*Hab.* AMAZONS.

The fulvous colour of the head and thorax in connection

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with that of the underside and legs will separate this species from any of its allies. Two exactly similar specimens are contained in my collection.

*Rhabdopterus semifulvus*, sp. n.

Fulvous with a slight æneous gloss, antennæ with the seventh and last joint piceous, the thorax greenish, very finely and rather closely punctured, the sides subangulate near the base, elytra with a feeble depression below the base, more strongly punctured, the punctures arranged in closely approached rows.

Length 3½–4 millim.

Of oblong, parallel shape, the head longer than broad, fulvous, more or less strongly stained with metallic green, remotely but strongly punctured, the clypeus more closely punctured, strongly separated from the face by a deep groove and laterally by the smooth raised callosities at the base of the antennæ, eyes large and round, antennæ long and slender, fulvous, the seventh and the last joint piceous; thorax nearly three times broader than long, the sides obliquely narrowed towards the apex, subangulate below the middle, with a narrow reflexed metallic green margin, the anterior angles slightly thickened, the surface rather closely and finely punctured, the punctures evenly distributed, the colour metallic greenish, scutellum of the same colour; elytra rather long, of a more distinct fulvous colour, slightly stained with æneous, the base with a feeble depression, rather more strongly punctured than the thorax, the punctures arranged in closely approached fairly regular rows, the interstices not raised; below and the legs fulvous, the anterior legs more elongate than the others, prosternum longer than broad, dilated at the base, impunctate, the first joint of the posterior tarsi as long as the following joints together.

*Hab.* AMAZONS.

Of a distinct fulvous colour; the thorax of a more pronounced metallic greenish tint than in *R. venezuelensis*, and very finely punctured, instead of finely granulate as in that species; the punctuation of the elytra stronger and more regularly placed in rows, the colour of the antennæ also different.

*Hermesia brunnea*, sp. n.

Entirely fulvous, thorax subangulate at the sides, extremely finely and closely punctured, elytra more strongly punctured in closely approached rather regular rows.

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Length 5–6 millim.

*Mas.* Head finely and rather closely punctured, the clypeus transverse, more strongly punctured than the vertex, antennæ extending to the middle of the elytra, fulvous, the third joint slightly shorter than the fourth; thorax twice as broad as long, the sides strongly rounded, subangulate in the female, very obscurely so in the male, with a distinct reflexed margin in both sexes, the surface very finely and closely punctured, with an obsolete depression at the sides; scutellum broader than long; elytra scarcely perceptibly depressed below the base, rather strongly and regularly punctured, the interstices slightly rugose, obsoletely costate near the apex; prosternum slightly narrowed at the middle.

*Hab.* BRAZIL.

Of this species, three specimens are contained in my collection; the female is of larger size, with the thorax more transverse and the reflexed margins broader and the angulation at the sides more marked. The species might perhaps equally well find its place in *Rhabdopterus* had it not been for the structure of the thorax. No other species of *Hermesia* described up to the present is of similar coloration. The exact locality is unknown to me.

### *Alethaxius angulicollis*, sp. n.

Obscure æneous, the basal joints of the antennæ fulvous, thorax finely and subremotely punctured, the sides angulate below the middle, elytra finely punctate-striate, the interstices costate at the extreme apex.

*Fem.* The elytra finely geminate-punctate, the base with three elongate tubercles.

Length 4–5 millim.

Head closely and rather strongly punctured, the clypeus not separated from the face, emarginate at its anterior edge, labrum æneous, palpi fulvous, the last joint piceous, antennæ short and robust, the terminal joints strongly thickened, more or less piceous, the basal five joints fulvous, the fourth and the following two joints of equal length, the third slightly shorter; thorax twice as broad as long, the sides obliquely narrowed anteriorly, angulate below the middle, the anterior margin produced at the middle, much shorter than the posterior one, the angles mucronate, the surface very finely and sparingly punctured at the disc, more strongly and closely so at the sides, scutellum broader than long, impunctate; elytra not wider at the base than the thorax, with a

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feeble depression below the base, very finely geminate punctate-striate near the suture, more strongly so at the sides, the interstices near the extreme apex longitudinally costate; legs short and stout, æneous like the underside, the anterior tibiæ strongly widened at the apex, carinate, the first joint of their tarsi strongly widened, prosternum narrow and elongate, its base slightly concave; the anterior margin of the thoracic episternum concave.

*Hab.* COLOMBIA (*Pehlke*), Mus. Stettin and my collection.

This is another species, for which it is difficult to find the proper place; it does not quite agree either with *Colaspis* or with *Alethaxius*; but the short and robust antennæ and the narrow prosternum induced me to place it in the latter genus. The thorax is, however, less transverse and even, and its lateral margin instead of being bi- or tri-sinuate, as in *Alethaxius*, is only angulate; anyhow these characters will help in the recognition of the species. Female specimens of other species of *Alethaxius* are likewise often provided with tubercles or short costæ at the base of the elytra; and in the present species, of which both sexes are before me, the female agrees in this respect with the other members of the genus.

### *Alethaxius* (?) *sericeus*, sp. n.

Below more or less greenish, the antennæ and legs flavous, head and thorax dark fulvous with greenish tint, closely punctured and finely pubescent, elytra flavous, the lateral margins greenish, strongly rugosely punctured, the interstices longitudinally costate.

Length 5 millim.

Of elongate, parallel shape, the head strongly and closely rugose punctate, metallic green, the ground colour dark fulvous, sparingly clothed with short grey pubescence, clypeus broad, not separated from the face, sculptured like the head, its anterior edge deeply triangularly emarginate, labrum and palpi flavous, antennæ extending to the middle of the elytra, flavous, the third joint very slightly shorter than the fourth one, the terminal joints moderately widened; thorax transverse, of equal width, the anterior and posterior margins parallel, the sides bisinuate, with a narrow reflexed metallic green margin, the disc extremely closely punctured and clothed with fine grey pubescence, scutellum sparingly punctured; elytra not wider at the base than the thorax, strongly punctured in double rows, the interstices transversely rugose, and longitudinally costate, flavous, the interior of the punctures and the lateral margins and epipleuræ

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simple, claws appendiculate, the prosternum narrowly elongate, pubescent.

*Hab.* COLOMBIA (*Pehlke*), Mus. Stettin and my collection.

The above description is that of the male, which may be known, as usually, by the dilated anterior tarsi; the insect is doubtfully placed by me in the present genus, on account of the scarcely thickened antennæ and the pubescent head and thorax, no other species of *Alethaxius* at present known being similar in structure; it agrees, however, in the shape of the thorax and that of the prosternum as well as in other details, with those of the genus in question.

*Alethaxius verrucosus*, sp. n.

Obscure fulvous with a slight bluish gloss, the apical joints of the antennæ and the tibiæ and tarsi blackish, thorax extremely closely and finely punctured, angulate at the sides, elytra very strongly and closely punctured, the interstices strongly verrucose and rugose at the sides.

*Var.* Legs entirely fulvous.

Length 5–7 millim.

Head very closely and rather finely punctured, as well as the clypeus, the latter obsoletely separated from the face, antennæ black, the lower six joints fulvous; thorax of equal width, scarcely twice as broad as long, the sides strongly dentate at the middle and angulate before and below the tooth, the surface extremely closely, evenly and finely punctured; elytra deeply and strongly punctured, the punctures irregularly arranged in rows at the suture, forming striæ near the apex, the interstices at the rest of the disc strongly verrucose and rugose, forming a more or less distinct costa near the lateral margin; legs bluish-black, the femora fulvous at the base.

*Hab.* BRAZIL, St. Catharina.

The general coloration is a light or dark fulvous with a more or less æneous gloss; the thorax is extremely closely and finely punctured, offering a great contrast with the elytra, on which the sculpture is coarse, close and irregular with very strongly rugose interstices; the colour of the legs seems very variable; the tibiæ and

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tarsi are bluish-black and the apex of the femora similarly coloured in what I take to be the normal form, specimens with fulvous legs representing the variety. There does not seem to be much difference between the sexes. I know of no other species of this genus which is similarly coloured; the comparatively short antennæ and the equal width of the thorax agree better with *Alethaxius* than with *Colaspis*.

### *Campylochira fulvicornis*, sp. n.

Below metallic cupreous, above æneous, antennæ, tibiæ and tarsi fulvous, thorax obscure cupreous, the sides bidentate, sparingly and strongly punctured, the punctures metallic green, elytra finely punctured in distant rows, more strongly so at the sides, the interstices at the latter place rugose.

*Mas.* The anterior tibiæ curved at the apex, the first joint of the tarsi dilated.

Length 8 millim.

Head cupreous, closely and strongly punctured with a deep longitudinal groove, clypeus well separated from the face, the base closely punctured, labrum fulvous, antennæ extending to the middle of the elytra, fulvous, the third and fourth joints equal, shorter than the fifth one; thorax about one-half broader than long, the sides rounded, bidentate at the middle, the surface irregularly and sparingly impressed with strong, metallic green punctures; elytra æneous with a cupreous gloss, finely and remotely punctate-striate near the suture, the base with a rather marked depression, the sides more strongly punctured and with the interstices rather rugose, the interior of all the punctures metallic green; below and the femora cupreous, the tibiæ and tarsi fulvous, prosternum broad, its base truncate.

*Hab.* BRAZIL, Espiritu Santo.

Allied to *C. fulvipes*, Lef., but of a totally different sculpture on account of the sparingly punctured thorax and remotely punctured elytra. The genus *Campylochira* is distinguished from *Podoxenus*, Lef., by the much shorter metatarsus of the posterior legs (which is very elongate in the last-named genus) and by the broad prosternum.

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This is one of the best defined groups on account of the base of the prosternum being either bilobed or concave. In *Chalcophana* proper the sides of the thorax are rounded, but in *Otilea* they are dentate. Here more than in any other group is it essential to distinguish the sexes, as the females very frequently have costate elytra, this character being wanting in the males. *Cychrea*, Baly, cannot, I think, be separated from *Chalcophana* as has been done by Lefèvre, but *Eriphyle* may be justified as a distinct genus on account of the distinctly widened terminal joints of the antennæ.

### *Otilea fulva*, sp. n.

*Mas.* Elongate, entirely fulvous, thorax angulate at the sides, remotely and irregularly punctured, elytra strongly subgeminate punctate-striate, the interstices longitudinally costate.

*Fem.* Thorax broader, the elytral costæ much more strongly raised, the interstices rugose at the sides.

Length 6–8 millim.

*Mas.* Of elongate, posteriorly pointed shape, the head very finely punctured, with a central longitudinal groove, the clypeus subquadrate, with a few deep punctures, antennæ long and slender, extending to the apex of the elytra, entirely fulvous; thorax twice as broad as long, the sides strongly angulate at the middle, the surface remotely, irregularly and rather strongly punctured, the sides with a more or less deep fovea, scutellum longer than broad; elytra pointed posteriorly, the shoulders prominent and angulate, strongly punctured in irregular double rows, the interspaces longitudinally costate, the costæ at the sides and at the apex very strongly raised; below impunctate, shining, legs long and slender, prosternum oblong, its base moderately bilobed.

*Hab.* VENEZUELA.

This species, distinguished by its uniform fulvous colour and the strongly costate elytra, was named by Lefèvre *O. jacobyi* but not described. I have therefore renamed it; the female is broader and larger, the thorax is, as usual, more transversely shaped and more sparingly punctured, and the elytral costæ are more strongly raised and their interstices at the sides rugose.

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### *Otilea foveipennis*, sp. n.

Metallic greenish cupreous, the antennæ, tibiæ and tarsi fulvous, thorax dentate at the sides, very sparingly and strongly punctured, elytra dark fuscous, foveolate punctate, the interstices rugose at the sides, longitudinally costate near the apex.

Length 8 millim.

*Fem.* Head remotely and rather finely punctured at the vertex, the latter metallic green, clypeus separated from the face by a triangular, rugosely punctured depression, fulvous, its surface impunctate, labrum and palpi fulvous, antennæ extending to the middle of the elytra, fulvous, all the joints, with the exception of the basal two, elongate and slender; thorax scarcely twice as broad as long, of equal width, the sides with a distinct tooth at the middle, the surface metallic green, with some deep punctures irregularly distributed across the middle of the disc, the margins impunctate; elytra much broader at the base than the thorax, narrowed posteriorly, of a fuscous slightly purplish colour, deeply, closely and irregularly foveolate-punctate, the sides strongly transversely rugose, the apex with three or four strongly raised costæ, the subsutural one of which is preceded by a row of regular and smaller punctures; below and the femora cupreous, with a more or less greenish gloss, the tibiæ and tarsi fulvous, prosternum distinctly bilobed, the mesosternum produced into a distinct point.

*Hab.* PERU.

I only know a single female specimen of this species, which may be at once known by the foveolate sculpturing of the elytra, which agree in that respect with *O. cariosa*, Oliv.; that insect is, however, of a much broader and more robust shape, and differs also in its general coloration and that of the antennæ.

### *Chalcophana fenestrata*, sp. n.

Flavous, the terminal joints of the antennæ black, head and thorax impunctate, elytra finely and irregularly punctured, black, each with four short stripes at the middle, placed transversely, and the apex, flavous.

Length 6 millim.

Of broadly ovate shape, the head impunctate, with a small depression between the eyes, flavous as well as the labrum and palpi, antennæ reaching to the middle of the elytra, flavous, the terminal five joints black, slightly flattened; thorax twice as broad as long, of

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impunctate, flavous, the anterior angles slightly produced outwards, scutellum flavous; elytra very finely and irregularly punctured, the apical portion nearly impunctate, black, the lateral margins from the middle downwards and the apex more broadly, flavous, four similarly coloured short, narrow spots are placed across the middle of each elytron; below and the legs flavous, the prosternum deeply bilobed.

*Hab.* UPPER AMAZONS, Ega.

Two specimens of this curiously-marked species are contained in my collection, both belonging apparently to the female sex.

*Chalcophana brevis*, sp. n.

Broadly ovate, fulvous, the terminal seven joints of the antennæ black, thorax finely and rather closely punctured, elytra greenish-cupreous, without depression, closely and rather finely punctate-striate.

Length 6 millim.

*Mas.* Of rather short and convex shape, the head closely punctured at the vertex, with a distinct longitudinal groove, frontal callosities bounded behind by a transverse groove, clypeus nearly impunctate, labrum and palpi fulvous, antennæ fulvous, the intermediate joints more or less piceous; thorax about one-half broader than long, rather strongly narrowed anteriorly, the anterior angles produced, the surface finely and irregularly punctured, the punctures of unequal size, scutellum fulvous; elytra without basal depression, very convex, of a brassy greenish colour, finely punctured in closely approached, semi-regular rows, the sides (in the female) with an indication of a short costa below the shoulders; the epipleuræ, the underside and legs fulvous, the breast posteriorly and the tarsi piceous.

*Hab.* COLOMBIA.

Allied to *C. landolti*, Lef., and *C. puncticollis*, Lef., likewise from Colombia, but the elytra in both sexes without basal depression and costæ (in the female there is only an indication of a short costa below the shoulders). *C. suavis*, Har., must be another closely allied species, but is larger, and the antennæ have only the basal two joints fulvous, the rest black, the apex of the elytra is likewise described as ferruginous.

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*Chalcophana cœruleipennis*, sp. n.

Fulvous, the antennæ, apex of the tibiæ and the tarsi black, thorax nearly impunctate, elytra strongly punctured in closely-approached rows, metallic blue, the extreme apex fulvous.

*Fem.* Elytra with deep basal depression, more finely punctured in double rows, the sides with three costæ, the inner and outer one abbreviated anteriorly.

Length 7–8 millim.

*Mas.* Head nearly impunctate, the clypeus swollen, with a few very minute punctures, antennæ black, the lower three joints more or less fulvous below (the last three joints wanting); thorax scarcely twice as broad as long, the sides rounded, the angles dentiform but scarcely produced, the surface with a few extremely fine punctures, scutellum fulvous; elytra with a distinct but not very deep depression below the base, bounded laterally by a short costa which begins at the shoulders, the surface rather strongly punctured in closely approached and fairly regular rows which show a slight tendency to run double, the punctures within the depression stronger than the others, the ground colour a bluish-green as well as the epipleuræ, the extreme apex fulvous; below, the femora and the basal portion of the tibiæ fulvous, the apex of the latter and the tarsi black, this colour extending at the anterior tibiæ nearly to the base.

*Hab.* COLOMBIA, S. Innes.

The female of this species is larger and broader, the thorax is twice as broad as long, and the anterior angles are produced outwards, the elytra are geminate punctate-striate with a deep basal depression and have four costæ at the sides; of these, the longest and most strongly-marked extends from the shoulders to the middle, two others are placed near the sides at the lower portion, and the fourth is placed at the middle and precedes the humeral costa, it is very short, the epipleuræ in the same sex are likewise fulvous; but in everything else it agrees with the male.

Amongst the species which have similarly coloured tibiæ and tarsi may be mentioned *C. consobrina*, Har., *C. effulgens*, Erichs., *C. viridipennis*, Germ., and *C. limbalis*, Har. Of these the first named has distinctly geminate punctate elytra, and the female has no elytral costæ, the second has no elytral fulvous apex, the third named is of different coloration and has only the tarsi black; *C. limbalis* differs in having the sides of the thorax sub-angulate; *C. eximia*,

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Baly, has likewise similarly coloured legs, but the elytra are of a different colour, and have eight costæ (presumably in the female).

### *Chalcophana erichsoni*, sp. n.

Black, with a slight bluish tint, the basal joints of the antennæ and the labrum fulvous, thorax with a few fine punctures, elytra reddish-brown, closely punctate-striate, the interstices at the sides costate.

Length 10 millim.

*Fem.* Head with a deep, central groove, finely strigose, clypeus elongate, wedge-shaped, scarcely punctured, labrum fulvous, antennæ black, the lower three joints fulvous (the last two joints wanting), fourth joint distinctly longer than the third; thorax scarcely twice as broad as long, narrowed anteriorly, the sides moderately rounded, the anterior angles produced, the surface with a few fine punctures and some very fine longitudinal strigæ near the base, bluish-black, scutellum black; elytra elongate, with a transverse depression below the base, reddish-brown, rather strongly and closely punctured, the punctures much finer towards the apex, sometimes slightly arranged in double or treble rows, the interstices at the sides below the base raised into short costæ to the number of three, the shoulders prominent and followed by a more pronounced costa extending nearly to the apex at which place it is very strongly raised, the lateral margin likewise strongly and acutely costiform; below and the legs black, very shining, with a slight bluish lustre, impunctate.

*Hab.* PERU.

I cannot identify this species, of which I only know the female, with *C. conspicua* of Lefèvre, who describes his insect (likewise from Peru) as having the abdomen "cyaneum," the breast, head and thorax as "nigro-æneis" and the tarsi as "rufis"; the author also describes the elytra as geminate punctate, and mentions two costæ only below the shoulders; in other respects the two insects seem very much alike.

### *Chalcophana picta*, sp. n.

*Fem.* Fulvous, the head, antennæ, the breast and the tibiæ and tarsi black, thorax minutely punctured, subangulate at the sides, elytra closely and more strongly punctured, fulvous, two elongate stripes (one humeral, the other lateral) and a transverse irregular band at the apex, including a fulvous spot, black.

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Length 7 millim.

Head with a few minute punctures, deeply triangularly depressed between the eyes, black as well as the labrum, antennæ black, the lower three joints more or less fulvous below (the terminal three joints wanting); thorax strongly transverse, more than twice as broad as long, the sides obliquely narrowed anteriorly, subangulate near the base, with a distinct reflexed margin, the anterior angles produced outwards, the surface with a few very minute punctures, fulvous, scutellum black; elytra irregularly and very closely punctured, without basal depression, fulvous, the shoulders with a black spot, ending in two elongate stripes, which run parallel to below the middle, the apex with a broad transverse band, the anterior edge of which is deeply concave at the suture and including a small fulvous spot of the ground colour, elytral epipleuræ fulvous anteriorly, black below the middle; below and the femora fulvous, the breast, tibiæ and tarsi black, prosternum deeply bilobed.

*Hab.* UPPER AMAZONS.

I only know a single female specimen of this rather aberrantly formed and marked species, which probably varies a good deal in the design of the elytra; these differ from those of any other species of the genus, and the angulation of the thorax and its greatly transverse shape is likewise strange to the majority of its allies, but not important enough to separate the species generically; it was on a somewhat similarly shaped species—*C. histrio*, Baly—that Baly founded his genus *Cychrea*, which cannot rightly be separated from *Chalcophana*.

## PSEUDOCOLASPINÆ.

All the genera included in this section are Eastern, the only exception is *Sphæropis*, which inhabits the southern and central portion of America. The species of this genus are all pubescent and of small size; not more than 6 or 8 species are at present known, to which I add another one here.

### *Sphæropis fruhstorferi*, sp. n.

Obscure æneous, clothed with silvery pubescence, the basal joints of the antennæ and the tibiæ and tarsi, more or less, fulvous, thorax closely and strongly punctured, elytra more finely but as closely punctured, the shoulders raised in shape of a short ridge.

Length 4 millim.

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sparingly clothed with erect whitish hairs, antennæ extending slightly beyond the base of the elytra, fulvous, the apical joints fuscous, strongly thickened, the fourth joint about the length of the second one, the third more elongate; thorax nearly twice as broad as long, the sides strongly rounded, the anterior portion rather strongly deflexed, the surface strongly but not very closely punctured at the disc, the punctures more crowded at the sides, of round shape, the interstices clothed with long white hairs, scutellum broad, punctured; elytra convex, parallel, much more finely punctured than the thorax, the punctures more distinct at the basal portion than posteriorly and arranged in closely approached irregular rows, the shoulders acutely costiform (♀?), the interstices everywhere furnished with long white hairs; below and the femora æneous, the tibiæ towards the apex and the tarsi fulvous.

*Hab.* BAHIA (*Fruhstorfer*).

Larger than *S. æruginosus*, Lef., the thorax less closely punctured and the apex of the tibiæ and tarsi fulvous. I am uncertain as to the sex.

## EDUSINÆ.

In this and the following sections are placed all those *Eumolpidæ* which have postocular lobes, or in which the anterior margin of the thoracic episternum is more or less convex, in opposition to the previous genera in which the same part is straight or concave; there are, however, many instances in which this character is obsolete, and the student is in doubt to which of the two groups the insect may be referred. These cases are, however, isolated, and any other mode of division would be equally uncertain as no character can be relied upon in the Phytophaga. It is rather remarkable that this group is but feebly represented in the New World, most of the genera having their metropolis in the Eastern portion of the globe.

### *Argoa mucronata*, sp. n.

Greenish-æneous, antennæ and legs fulvous, thorax closely punctured and finely strigose, elytra strongly punctured, the interstices transversely rugose at the sides, longitudinally costate at the apex.

*Mas.* The anterior tibiæ with a short spur at the apex, the tarsi dilated.

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Length 5 millim.

Head finely and closely punctured, with a feeble longitudinal sulcus, labrum fulvous, antennæ fulvous, slender, extending to about the middle of the elytra, the third and following joints equal, terminal joints slightly thickened; thorax scarcely one-half broader than long, the sides rounded, slightly narrowed anteriorly, the surface very closely punctured, the sides closely longitudinally strigose; scutellum with a few punctures; elytra much more strongly punctured than the thorax, the punctures arranged in irregular rows near the suture, very closely and irregularly at the sides, the interstices at the latter place strongly transversely rugose, costate at the apex; legs fulvous, the apex of the anterior tibiæ produced outwards into a short spur; the intermediate tibiæ curved at the apex; prosternum elongate, narrowed between the coxæ, the anterior margin of the thoracic episternum convex.

*Hab.* BRAZIL, S. Catarina.

Distinct from the other species of the genus by the structure of the anterior tibiæ in connection with the very closely punctured thorax.

## MYOCHROINÆ.

### *Glyptoscelis dohrni*, sp. n.

Obscure æneous, clothed with white pubescence, the antennæ and legs fulvous, thorax very finely punctured, elytra more strongly punctured than the thorax, the interstices transversely wrinkled; below clothed with dense white pubescence.

Length 6 millim.

Head finely and moderately closely punctured, clothed with white hairs, the clypeus separated from the face by a shallow grove, labrum and palpi fulvous, the antennæ not extending to the middle of the elytra, fulvous, the terminal joints slightly thickened; thorax about one-half broader than long, the sides straight, the posterior margin oblique at the sides and produced at the middle, the disc finely punctured and clothed with white pubescence; elytra closely and more strongly punctured than the thorax, the punctures irregularly placed except near the suture, the interstices fully transversely wrinkled at the sides, less distinctly so at the inner disc and thinly clothed with white pubescence in a longitudinal direction; under surface densely covered with white hairs, the legs fulvous.

*Hab.* COLOMBIA (*Pehlke*), Mus. Stettin and my collection.



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*æneipennis*, Baly (= *fascicularis*, Baly), and devoid of any white hairy spots; the finely punctured thorax, entirely fulvous antennæ and general smaller size separates the species from *G. gayi*, Lef. The sexes do not differ materially, but the last abdominal segment of the female is provided with a shallow fovea.

### *Dictyneis canaliculata*, sp. n.

Elongate, dark fulvous, clothed with grey pubescence, thorax very finely rugose-punctate, with lateral depressions, elytra strongly and closely punctured, the interstices rugose, the apex suddenly deflexed with two rows of divergent tubercles, forming a channel.

Length 7 millim.

*Fem.* Head dark brown, clothed with fulvous pubescence, longitudinally channelled at the middle, finely rugose, the clypeus more strongly so, transverse, palpi and antennæ fulvous, the third joint longer than the fourth, the apical joints slightly thickened, extending beyond the middle of the elytra; thorax about one-half broader than long, the sides with a strongly produced angle below the middle, the disc with a shallow depression at the sides, very finely rugose-punctate, scutellum transverse, pubescent; elytra narrowed posteriorly, the apical portion deflexed at right angles, the disc strongly rugose-punctate throughout, with traces of longitudinal raised lines which at the truncate portion form a ridge of highly-raised tubercles which diverge slightly towards the apex without extending to the latter, the apical portion of the elytra is very thickly covered with grey pubescence; legs dark fulvous, all the femora armed with a tooth.

*Hab.* CHILI.

There is no other species of this genus described which resembles the present insect in the structure and sculpturing of the elytra. The male is unknown to me.

## ENDOCEPHALINÆ.

### *Endocephalus tibialis*, sp. n.

Pale fulvous, the antennæ (the basal joints excepted), tibiæ and tarsi black, thorax closely and irregularly punctured, elytra much more strongly punctured, the interstices slightly rugose.

Length 9 millim.

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Head finely and remotely punctured with an obsolete transverse depression between the eyes, the clypeus more strongly and closely punctured, antennæ not extending to the middle of the elytra, black, the lower four joints pale fulvous, terminal joints strongly thickened; thorax nearly twice as broad as long, widened at the middle, the lateral margins nearly straight, the surface punctured like the head, the angles acute and slightly thickened; elytra rather strongly, irregularly and closely punctured, the interstices finely rugose or wrinkled, the shoulders prominent and subcostate at the lower portion; below and the legs fulvous, the knees, tibiæ and tarsi black.

*Hab.* BRAZIL.

I only know female specimens of this species, which differs from any of its congeners in its system of coloration.

*Endocephalus nigripes*, sp. n.

Black, the basal joints of the antennæ fulvous, above testaceous, thorax strongly and sparingly punctured, elytra closely and semi-regularly punctate, legs black.

Length 8 millim.

Head broad, the vertex impunctate, the clypeus not separated from the face, distinctly punctured, antennæ extending beyond the middle of the elytra, black, the lower five joints testaceous or fulvous, the third and fourth joint equal; thorax twice as broad as long, the sides deflexed, the lateral margins straight at the base, slightly rounded anteriorly, the disc rather deeply punctured at the basal portion, very sparingly and finely so anteriorly, scutellum oblong; elytra subcylindrical, testaceous, shining, rather strongly punctured in closely approached and very irregular rows which become much finer near the apex; below and the legs black, the prosternum and the mesosternum flavous, the abdominal segments more or less margined with fulvous.

*Hab.* BRAZIL, Espiritu Santo.

At once distinguished from the preceding species by the black underside and legs; there does not seem to be much difference between the sexes, beyond the rather larger size of the female.

*Endocephalus militaris*, sp. n.

Fulvous, the antennæ, tibiæ and tarsi black, thorax finely and remotely punctured, elytra strongly and irregularly punctate, flavous,

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a broad band at the base and another below the middle, not extending to the sides or apex, metallic blue.

Length 8 millim.

*Fem.* Head finely punctured at the vertex, the latter convex, rather deeply grooved at the middle, epistome more strongly punctured, apex of the mandibles black; antennæ not extending to the middle of the elytra, robust, black, the lower three joints fulvous, third and fourth joint equal, the following joints rather strongly thickened; thorax twice as broad as long, of nearly equal width, the sides straight at the base, feebly rounded anteriorly, the surface finely and sparingly punctured, reddish fulvous; scutellum flavous; elytra elongate, subcylindrical, very closely, strongly and rather irregularly punctured, the interstices somewhat raised, the anterior half occupied by a regular-shaped, transverse blue band not extending to the lateral margins, the posterior portion with a rather broader band, similarly abbreviated at the sides and apex, leaving these of the flavous ground colour which also separates the blue bands at the middle, in shape of a narrow and very regular band; below and the femora fulvous, the tibiæ and tarsi black.

*Hab.* BRAZIL, Espiritu Santo.

Evidently very closely allied to *E. fasciatus*, Lef., and nearly agreeing in its system of coloration with that species, but without any marks on the thorax and the punctuation of the latter not dense and aciculate as Lefèvre describes his species, the general size of *E. militaris* also smaller.

*Colaspoides pavonina*, sp. n.

Fulvous or piceous, terminal joints of the antennæ black, thorax very sparingly and minutely punctured, elytra closely and finely punctured, two spots at the base, one at the sides below the middle and another at the apex of each elytron, flavous.

*Var.* Elytra flavous, the margins and two transverse bands, one before, the other below the middle, piceous.

Length 7 millim.

*Fem.* Head minutely punctured, dark fulvous or piceous, the clypeus not separated from the face, antennæ rather short, fulvous, the terminal five joints black, third and fourth joints equal; thorax more than twice as broad as long, finely and sparingly punctured, the sides rounded and narrowed towards the apex, the surface dark fulvous, shining, scutellum fulvous; elytra very closely and rather irregularly punctured, fulvous, each with four flavous spots which are surrounded by black rings, of these spots two are placed

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at the base, the outer one surrounding the shoulders, the inner one rounded in shape, another spot is placed close to the lateral margin below the middle, and the fourth, of larger ovate shape, near the apex; below and the legs fulvous.

*Hab.* BRAZIL, Espiritu Santo.

This species cannot be the *C. ocellata*, Lef., which is described as having the elytra black with five fulvous spots on each. I do not think I err in considering the banded form as representing an aberration in which the spots have united into bands, since it is not accompanied by any difference in structural characters.

*Colaspoides opulenta*, sp. n.

Obscure fulvous, antennæ (the basal joints excepted) and the tarsi black, head metallic green, thorax obsoletely punctured, flavous, the basal margin piceous, elytra greenish æneous, closely and semi-regularly punctured.

Length 7 millim.

Head sparingly but strongly punctured, metallic green, clypeus transverse, more closely and finely punctured, labrum fulvous, antennæ extending below the middle of the elytra, black, the lower three joints fulvous, fourth joint much smaller than the third and fifth joint; thorax strongly transverse, slightly narrowed in front, the sides feebly rounded, the disc with a few very fine punctures, flavous, the anterior and posterior margins obscure piceous; scutellum greenish, impunctate; elytra rather elongate, not very convex, closely and evenly punctured, the punctures of moderate size; below and the legs fulvous, tarsi black.

*Hab.* COLOMBIA.

I know of no similarly coloured species of this genus; a single male example is contained in my collection.

*Colaspoides abdominalis*, sp. n.

Dark violaceous, the head and breast sometimes metallic green, the antennæ, legs and abdomen fulvous, thorax very finely and sparingly punctured, elytra more strongly and very closely semi-punctate-striate.

Length 5 millim.

*Mas.* Head rather closely and strongly punctured, with a deep central groove, clypeus sparingly and more finely punctured, eyes

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reniform, the labrum and palpi fulvous, antennæ with the lower eight joints fulvous (the rest wanting), the third joint one-half longer than the fourth, the latter equal in length to the sixth joint; thorax more than twice as broad as long, the sides rounded with an extremely narrow margin, the surface convex, finely and sparingly punctured; scutellum impunctate; elytra very convex, without basal depression, more strongly punctured than the thorax, the punctures arranged in closely approached rather regular rows of equal size throughout, the interstices not raised, the shoulders prominent; legs and abdomen bright fulvous, the breast dark violaceous.

*Hab.* BOLIVIA.

Easily known by the system of coloration; in one of my specimens, the head and the breast are metallic green; the species is closely allied to *C. tibialis*, Lef., but is smaller, the punctuation of the elytra is much closer and the antennæ and legs are entirely fulvous.

*Colaspoides paraguayensis*, sp. n.

Elongate and parallel, black, the head and thorax dark fulvous, strongly punctured, elytra blackish with violaceous tint, strongly and closely punctured, the interstices semi-rugose, the apical portion with a short acute costa at the sides.

Length 7 millim.

Head strongly and not very closely punctured, with a central longitudinal groove, clypeus transverse, indistinctly separated from the face, sparingly punctured, antennæ long and slender, black, the basal four joints fulvous; thorax twice as broad as long, the sides rounded, the anterior angles produced, the surface strongly and remotely punctured, fulvous; scutellum with a deep fovea, black; elytra elongate and subcylindrical, violaceous black, very strongly and closely punctured, the interstices slightly rugose and here and there with traces of longitudinal smooth lines, the apical portion with a distinctly raised short costa near the sides; below and the legs black; anterior margin of the pro-thoracic episternum strongly convex; prosternum longitudinally sulcate at the sides.

*Hab.* PARAGUAY.

Quite distinct in coloration and the presence of the single elytral costa from any other South American species of the genus; there are four specimens, apparently of both sexes, contained in my collection.

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### *Colaspoides decemlineata*, sp. n.

Fulvous, head and thorax extremely finely and closely punctured, elytra more distinctly punctured, flavous, each with five narrow longitudinal stripes and the suture anteriorly, dark brown.

*Var.* All the elytral stripes short and interrupted.

Length 7 millim.

Head with a central longitudinal groove, closely and finely punctured, the epistome triangular, separated from the face by narrow grooves, closely and finely punctured, antennæ extending beyond the middle of the elytra, entirely fulvous, the terminal five joints distinctly thickened and shortened; thorax twice and a half broader than long, the sides nearly straight, narrowed towards the apex, the posterior margin strongly rounded, the surface punctured like the head, fulvous; scutellum dark fulvous; elytra much more strongly punctured than the thorax, the punctures closely and irregularly placed, the disc alternately striped with flavous and brown, forming on each elytron five dark narrow stripes, of which the intermediate one does not reach the apex, while the preceding and following stripes are joined posteriorly, the same is the case with the outer three at the base.

*Hab.* BRAZIL, San Paulo.

The variety is much paler in colour and all the stripes are interrupted; this specimen is probably immature. Both sexes are before me.

### *Colaspoides flavofasciata*, sp. n.

Dark brown, the terminal joints of the antennæ black; thorax nearly impunctate, strongly transverse, elytra closely and finely punctured, with a subsutural and lateral pale flavous longitudinal stripe.

*Var.* Elytra pale fulvous or testaceous, with or without the flavous stripes.

Length 7 millim.

*Fem.* Head very finely punctured, the clypeus not separated from the face, the antennæ not extending to the middle of the elytra, fulvous, the terminal four joints black, third and the following two joints elongate, nearly equal, apical joints short; thorax rather more than twice as broad as long, narrowed in front, the sides and the posterior margin strongly rounded, the angles acute, the surface with a few extremely fine punctures; elytra strongly convex, closely and finely punctured, the punctures of nearly equal size throughout and

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narrow flavous band, the lateral margins and the epipleura of the same colour; below and the legs dark brown, femora unarmed.

*Hab.* BRAZIL, Espiritu Santo.

I know of no similarly coloured species of *Colaspoides;* the unicolorous variety resembles *C. vulgata,* Lef., and *C. nigrimana,* Lef., but the general size is much larger and the colour of the antennæ and sculpturing of the elytra quite different from either species.

*Colaspoides balyi,* sp. n.

Fulvous, the vertex of the head and the apical joints of the antennæ black, thorax with a few fine punctures, elytra closely punctate-striate, fulvous, a broad transverse band at the base and another below the middle, not extending to the apex, black.

*Var.* Head entirely fulvous.

Length 6 millim.

Head rather closely and distinctly punctured, depressed between the eyes, the epistome broad, similarly punctured, labrum flavous, antennæ extending below the middle of the elytra, fulvous, the outer six joints black, third and fourth joints equal, the fifth longer, terminal joints very slightly widened; thorax twice as broad as long, fulvous, the sides strongly rounded, the surface with a few very fine punctures irregularly distributed; scutellum fulvous; elytra very closely punctured in irregular rows, the punctures of even size and distinct to the apex, with a broad transverse black band, extending to one-third of their length, its posterior edge sinuate and not extending quite to the lateral margins, immediately below the middle another equally broad band of triangular shape occupies the posterior portion of the elytra, leaving the lateral and apical margins of the ground colour, these two bands are separated by a narrow fulvous band of nearly regular shape; underside and legs entirely fulvous.

*Hab.* BRAZIL, Espiritu Santo.

Of this well-marked species I possess three specimens of both sexes, one of which has the vertex of the head black but differs in no other way; it may be separated from *C. bifasciata* by the entirely fulvous thorax and the different position of the elytral bands; from *C. fasciata,* Lef., the insect differs in the unspotted thorax and in the black portion of the elytra, which does not extend to the

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lateral or apical margins in the present species, and in the fulvous tarsi. *C. deyrollei*, Baly, has the under surface and legs piceous and differs entirely in its system of coloration.

## MELINODEA, gen. nov.

Body oblong, glabrous, antennæ with the apical joints dilated, palpi incrassate, thorax transverse, of equal width, the sides entire, feebly rounded, scutellum oblong, elytra wider than the thorax, irregularly punctured, legs robust, the femora unarmed, tibiæ bicarinate at each side, the first joint of the posterior tarsi longer than the second one, claws bifid, the inner division short, prosternum broad, its apex truncate, the anterior margin of the thoracic episternum convex.

The genus proposed here will enter the group of *Endocephalinæ* of Chapuis' arrangement; it does not agree with any genus placed in that section and seems intermediate between *Endocephalus* and *Melinophora*, from both of which it differs in the bifid claws; the more elongate shape approaches nearly to *Endocephalus* but the shape of the thorax is rather more transverse and less subcylindrical, the same difference separates the genus from *Melinophora*, in which the thorax is rounded and dilated at the sides.

### *Melinodea metallica*, sp. n.

Below and the legs violaceous blue, above metallic greenish, head and thorax extremely minutely punctured, elytra very finely and closely punctured, the interstices minutely granulate and aciculate.

Length 8 millim.

Head very sparingly and finely punctured and granulate, green, subopaque, the spaces at the base of the antennæ dark blue, clypeus separated at the sides only by fine oblique grooves, bluish, its apex triangularly emarginate, labrum and palpi black, the latter strongly thickened, eyes sinuate at their inner margin, antennæ extending to about the middle of the elytra, black, the lower joints bluish, the terminal five joints widened and flattened; thorax twice as broad as long, the anterior margin straight at the middle, the angles produced in front, posterior margin obliquely widened towards the middle, the sides feebly rounded, with a narrow marginal groove, the surface sculptured and punctured like the head; scutellum blue, finely punctured; elytra convex, narrowed at the apex, the shoulders

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stices everywhere aciculate and granulate; below and the legs violaceous blue.

*Hab.* BRAZIL, Minas Geraes.

I only know of a single, apparently male, specimen; this is contained in my collection.

## TYPOPHORINÆ.

### *Paria subænea*, sp. n.

Obscure æneous, antennæ and legs fulvous, thorax finely and closely punctured, elytra strongly punctate-striate, the punctures obsolete near the apex, fulvous, a spot near the scutellum, the sides anteriorly, the suture and an elongate mark at the middle of each elytron, æneous.

Length 2½ millim.

Head obscure æneous, finely punctured at the vertex, the middle with a finely raised ridge, clypeus subquadrate, with a few punctures, eyes surrounded by a very narrow groove which meets in front of the clypeus, antennæ fulvous, the terminal joints strongly thickened; thorax subcylindrical, about one-half broader than long, the sides rounded, the surface finely and closely punctured, obscure æneous, the ground colour fulvous, scutellum æneous, impunctate, elytra wider at the base than the thorax, scarcely perceptibly depressed below the base, strongly and regularly punctate-striate anteriorly, the punctures nearly absent near the apex, fulvous, the humeral callus and a spot near the scutellum, the suture narrowly and the lateral margins more broadly æneous, a larger spot of similar colour is placed at the middle of the disc; below obscure æneous, the legs fulvous.

*Hab.* LA PLATA.

The most nearly allied species to this one seems to be *P. maculigera*, Lef., but the author describes the head as deeply sulcate between the eyes, the vertex as smooth and the thorax as strongly punctured at the sides, the elytra are also provided with an extra subapical spot. I received several specimens of the present insect from Mons. Clavareau of Brussels.

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## XII. *Lepidoptera Heterocera from Northern China, Japan, and Corea.* By JOHN HENRY LEECH, B.A., F.L.S., F.Z.S., etc.

### PART IV.

IN this section of my paper, which concludes the consideration of the family *Noctuidæ*, four hundred and twenty-six species are enumerated. These, with the exception of five members of the *Acontiinæ* previously omitted, belong to *Palindiinæ, Sarrothripinæ, Euteliinæ, Stictopterinæ, Gonopterinæ, Quadrifinæ, Focillinæ*, and *Deltoidinæ*.

One hundred and fourteen species and two local forms are, I believe, now described for the first time.

### Genus CORGATHA (ante, p. 161).

#### 1146. *Corgatha mira.*

*Selenis mira*, Butl., Ill. Typ. Lep. Het., iii, p. 29, pl. xlvii, fig. 6 (1876).
*Corgatha mira*, Leech, Trans. Ent. Soc. Lond., 1900, p. 161.

In addition to the specimen in Pryer's collection previously mentioned, I have examples from Fushiki, Gensan, and Chang-yang.

Pryer's specimen and that from Chang-yang have the venation on outer area yellowish. The submarginal line in the other specimens is obscured.

*Distribution.* JAPAN; CENTRAL CHINA; COREA.

#### 1147. *Corgatha argillacea.*

*Egnasia argillacea*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 450 (1879).
*Aventiola* (?) *Aventina costimacula*, Staud., Rom. sur. Lép., vi, p. 604, pl. xiv, fig. 4 (1892).

Described from Yokohama.

There were specimens in Pryer's collection. I obtained examples at Nagahama and Gensan in July, and at Sakata in August.

*Distribution.* AMURLAND; JAPAN; COREA.



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1148. *Corgatha liberata.*

*Oruza* (?) *liberata*, Walk., Cat. Lep. Het., xxiv, p. 1089 (1862).

*Acantholipes metalligera*, Butl., Trans. Ent. Soc. Lond., 1881, p. 190.

Walker's type was from Shanghai, and that described by Butler from Tokio.

*Distribution.* EASTERN CHINA; JAPAN.

1149. *Corgatha fasciola*, sp. n.

Primaries yellowish-brown with a pinkish tinge especially on the costal area; sub-basal and postmedial lines black, the former not well defined and the latter curved beyond the cell; an oblique brown fascia from middle of the inner margin extends to the cell where it is attenuated; submarginal line black, bidentate below the middle, inwardly edged with blackish above the dentation, the area beyond this line is paler than the rest of the wing, and is clouded and freckled with blackish. Secondaries yellowish-brown with a brown oblique fascia before the middle, and a black irregular line beyond.

Expanse 18 millim.

One specimen taken by myself at Sakata in August and one example in Pryer's collection, the latter is not so yellow in colour as the specimen described.

*Habitat.* JAPAN.

1150. *Corgatha* (?) *lutefascialis.*

*Mestleta lutefascialis*, Leech, Ent., xxii, p. 65, pl. ii, fig. 15 (1889).

I obtained one male specimen (the type) in Satsuma in May. Except that it is not so red in the coloration, this example agrees very closely with the figure of "*Aventiola*" *solitaria*, Staud. (l. c. p. 605, pl. xiv, fig. 5).

*Habitat.* KIUSHIU.

Subfamily *PALINDIINÆ.*

Genus DINUMMA.

Walker, Cat. Lep., xv, p. 1805 (1858).

1151. *Dinumma deponens.*

*Dinumma deponens*, Walk., Cat. Lep. Het., xv, p. 1806 (1858); Hampson, Fauna Brit. Ind., Moths, ii, p. 355 (1894).

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*Dinumma bipunctata*, Motsch., Etud. Ent., 1860, p. 32.
*Amphipyra largeteaui*, Oberth., Etud. d'Entom., x, p. 28, pl. ii, fig. 7 (1884).

This species occurred at Gensan and in most of the localities in Japan that I visited in June and July.

Oberthür records it from Kouy-Tchéou, and this is probably the same district referred to by me as the province of Kwei-chow, whence I have received specimens, and also from Wa-shan, Ta-chien-lu, Omei-shan, Chang-yang, and Kiukiang. Occurs in June and July.

*Distribution.* DHARMSÁLA (*Hampson*); EASTERN, CENTRAL and WESTERN CHINA; COREA; JAPAN.

## Genus CALLYNA.

Guen.; Hampson, Fauna Brit. Ind., Moths, ii, p. 355 (1894).

1152. *Callyna chalcöela*, Hampson, Journ. Bomb. Soc., ined.

One male specimen taken at Ta-chien-lu in July.

*Distribution.* SIKHIM; WESTERN CHINA.

## Genus BREVIPECTEN.

Hampson, Fauna Brit. Ind., Moths, ii, p. 361 (1894).

### 1153. *Brevipecten consanguis*, sp. n.

Closely allied to *B. captatus*, Butl., but the ground-colour is more violaceous-grey; the antemedial line is more oblique; the central line is not sinuous; the postmedial line is more acutely angled; the chocolate patch on middle of the costa is larger and not indented on its outer edge, and that further towards apex is more trigonate in shape; there are no black spots below the central patch.

Expanse ♂ 36 millim., ♀ 24 millim.

Three male specimens and one female from Ichang, one example of each sex from Chang-yang, two males from Moupin and one from Ni-tou. Occurs in July and August.

*Habitat.* CENTRAL and WESTERN CHINA.

The largest female specimen in my series of *B. captatus* from Sultanpore measures 36 millim. in expanse, while the smallest is 30 millim.

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### 1154. *Brevipecten apicalis*, sp. n.

Primaries light cinnamon-brown; oblique antemedial, curved postmedial line, and outlines of stigmata, paler; a conspicuous chocolate-brown patch, its outer edge indented, on the outer third of the costa and a small spot of the same colour below it near the inner margin. Secondaries cupreous-brown suffused with fuscous on the outer margin. Under surface uniform pale brown with a slight pink tinge.

Expanse 40 millim.

The type, a female specimen from Che-kiang, is in the National Collection at South Kensington, together with an example from Burma.

*Distribution.* EASTERN CHINA; BURMA.

## Subfamily *SARROTHRIPINÆ.*

### Genus GADIRTHA.

Walker, Cat. Lep. Het., xiii, p. 1102 (1857).

### 1155. *Gadirtha inexacta.*

*Gadirtha inexacta*, Walk., Cat. Lep. Het., xiii, p. 1102 (1857); Hampson, Fauna Brit. Ind., Moths, ii, p. 367 (1894).
*Gadirtha impingens*, Walk., l. c., p. 1103.

One female specimen received from Ichang and one from Chang-yang; the former is labelled as taken in June and the latter in August.

*Distribution.* SIKHIM; MOULMEIN (*Hampson*); SOUTHERN and CENTRAL CHINA.

### Genus PLOTHEIA.

Walker, Hampson, Fauna Brit. Ind., Moths, ii, p. 368 (1894).

### 1156. *Plotheia manleyi.*

*Selepa manleyi*, Leech, Proc. Zool. Soc. Lond., 1889, p. 479, pl. lii, fig. 1.

There were specimens from Yokohama in Pryer's collection. My native collector obtained examples at Nikko and also at Gensan.

*Distribution.* JAPAN; COREA.

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### 1157. *Plotheia clara.*

*Selepa manleyi* var. *clara*, Leech, Proc. Zool. Soc. Lond., 1889, p. 479.

Two examples from Oiwake and one from Yokohama in Pryer's collection. I also received one specimen from Mr. Manley of Yokohama.

In my former paper I described this as a form of *P. manleyi*, but I am now inclined to think that it is distinct from that species, and separable by its smaller size, greyer colour, and rather different angulation of the transverse lines, especially as regards the basal and inner lines.

*Habitat.* JAPAN.

## Genus HYBLÆA.

Fabricius, Ent. Syst., iii, 2, p. 127 (1794).

### 1158. *Hyblæa puera.*

*Noctua puera*, Cram., Pap. Exot., pl. ciii, figs. D, E (1777).
*Noctua saga*, Fabr., Mant. Ins., ii, p. 137.
*Noctua unxia*, Hübn., Noct., fig. 513.
*Heliothis apricans*, Boisd., Faun. Ent. Madag., p. 98, pl. xv, fig. 7.
*Hyblæa fortissima*, Butl., Trans. Ent. Soc. Lond., 1881, p. 191.
*Hyblæa puera*, Leech, Proc. Zool. Soc. Lond., 1889, p. 518; Hampson, Fauna Brit. Ind., Moths, ii, p. 371 (1894).

Fenton obtained the species at Tokio. I have received specimens from Chang-yang, Chia-kou-ho, Chia-ting-fu, Wa-shan, and Chung-king, the latter were bred from larvæ obtained in May; there was one example from Loochoo in Pryer's collection.

*Distribution.* WEST INDIES; SOUTH AFRICA; throughout INDIA, BURMA, and CEYLON; JAVA; NEW GUINEA; CAPE YORK (*Hampson*); JAPAN; LOOCHOO; CENTRAL and WESTERN CHINA.

## Genus GERBATHA.

Butler, Ill. Typ. Lep. Het., iii, p. 24 (1879).

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*Gerbatha ypsilon*, Butl., Ill. Typ. Lep. Het., iii, p. 24, pl. xlvii, fig. 1 (1879).

One specimen from Yokohama in Pryer's collection.

*Habitat.* JAPAN.

Hampson has removed *laticincta*, Walk., the type of the genus *Gerbatha*, Walk., to *Labanda*, Walk., where it stands as a synonym of *L. semipars*, Walk. The species here placed in *Gerbatha* are not congeneric with the Indian species of *Labanda*. I have, however, left Butler's species as I found them, and have added one new one.

### 1160. *Gerbatha angusta.*

*Gerbatha angusta*, Butl., Ill. Typ. Lep. Het., iii, p. 24, pl. xlvii, fig. 2 (1879).

A fine series from Yokohama in Pryer's collection, the specimens ranging in expanse from 30—40 millim. One example is rather pale, and the lines are not clearly defined.

*Habitat.* JAPAN.

### 1161. *Gerbatha granitalis.*

*Gerbatha granitalis*, Butl., Trans. Ent. Soc. Lond., 1881, p. 194.

Occurs at Yokohama, Tokio and Gensan. I have four specimens.

*Distribution.* JAPAN; COREA.

### 1162. *Gerbatha connexa*, sp. n.

Primaries grey, suffused with darker and clouded with brown; basal line black, antemedial line black, rather broad, acutely angled above inner margin; postmedial line black, curved but indistinct towards costa, bidentate below the middle and indented above the inner margin; submarginal line black, wavy, sharply indented above the middle, where it is followed by a whitish spot, which is sometimes tinged with brown edged with whitish or brownish towards the inner margin; reniform and orbicular stigmata whitish, centred with grey, and the space between them is brown traversed by an abbreviated black line from the costa; a black diffuse bar below the median nervure connecting the transverse lines. Secondaries fuscous

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with darker discal dot. Under surface greyish, suffused with fuscous on the disk of the primaries; secondaries powdered with fuscous.

Expanse 36 millim.

Seven female specimens from Chow-pin-sa, taken in May or June.

*Habitat.* WESTERN CHINA.

## Genus BLENINA.

Walker; Hampson, Fauna Brit. Ind., Moths, ii, p. 377 (1894).

### 1163. *Blenina senex.*

*Dandaca senex*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 82 (1878); Ill. Typ. Lep. Het., iii, p. 13, pl. xliv, fig. 6 (1879).

*Dandaca* (?) *megei*, Oberth., Etud. d'Entom., vi, p. 20, pl. ix, fig. 6 (1881).

*Eliochrœa senex*, Leech, Proc. Zool. Soc., Lond., 1889, p. 542.

A fine series from Yokohama in Pryer's collection. I obtained the species in Satsuma in May, and at Nagahama in July; my native collector took examples at Gensan in August. Oberthür records the species as *D. megei* from Kouy-Tchéou, and I received two specimens from Omei-shan. There is an example from Shanghai in the National Collection at South Kensington.

Variable both as regards depth of colour and intensity of marking.

*Distribution.* KIUSHIU; JAPAN; EASTERN and WESTERN CHINA; COREA.

## Genus SARROTHRIPA.

Curtis, Brit. Ent., i. fig. 29 (1824); Hampson, Fauna Brit. Ind., Moths, ii, p. 387 (1894).

### 1164. *Sarrothripa revayana.*

*Tortrix undulana*, Hübn., Tortr., fig. 7 (1796).

*Penthina revayana*, Tr., Schmett., viii, p. 22 (1830).

*Sarrothripa undulana*, Staud., Rom. sur Lép., vi, p. 253 (1892).

*Sarrothripa revayana*, Hampson, Fauna Brit. Ind., Moths, ii, p. 387 (1894).



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Four specimens of the ashy-grey form (*russiana*, Dup.) in Pryer's collection; these were from Yokohama and Oiwake.

Staudinger records vars. *dilutana*, Hübn. and *degenerana*, as well as the type form from Amurland.

*Distribution.* EUROPE.—AMURLAND; JAPAN.

### 1165. *Sarrothripa coreana*, sp. n.

Primaries silvery-grey freckled with darker grey; sub-basal line indistinct; antemedial line wavy, double, oblique; postmedial line slightly wavy, double, curved beyond the cell; a fuscous brown patch extending along the costa to a whitish lunule before the irregular, dusky, submarginal line; a dark spot at the end of the cell with a whitish lunule on its outer edge. Secondaries fuscous grey. Under surface silky, fuscous grey, primaries rather darker.

Expanse 18 millim.

One male specimen taken by native collector at Gensan in July.

*Habitat.* COREA.

## Genus BALSA.

Walker, Can. Nat. and Geol., v, p. 250 (1860).

### 1166. *Balsa malana.*

*Brachytænia malana*, Fitch, 1st and 2nd Rep. Ins. N.Y., p. 244, pl. iii, fig. 5 (1856).

*Nola leodura*, Staud., Rom. sur Lép., iii, p. 178, pl. x, fig. 2 (1887).

Five specimens from Oiwake in Pryer's collection.

*Distribution.* NORTH AMERICA.—AMURLAND; JAPAN.

## Subfamily *EUTELIINÆ.*

## Genus ANUGA.

Guen.; Hampson, Fauna Brit. Ind., Moths, ii, p. 389 (1894).

### 1167. *Anuga japonica.*

*Piada multiplicans* var. *japonica*, Leech, Proc. Zool. Soc. Lond., 1889, p. 538, pl. lii, fig. 6.

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The male type was from Yesso and the female from Sendai, the latter was taken by myself in September.

The antennæ of the male are shorter than in typical *Anuga* and have long pectinations on basal two-thirds. I was inclined to think that this species should be referred to *Eutelia* and belonged to Hampson's Sect. III. B. of that genus; other characters, however, indicate its proper position to be in *Anuga*.

"*Piada*" *multiplicans*, Walk. is given by Hampson as a synonym of *A. constricta*, Guen., a species which has been recorded from Hong Kong but, so far as I am aware, not from any other part of China.

*Habitat.* YESSO and JAPAN.

### 1168. *Anuga lunulata.*

*Anuga lunulata*, Moore, Proc. Zool. Soc. Lond., 1867, p. 62; Hampson, Fauna Brit. Ind., Moths, ii, p. 390 (1894).

One specimen from Wa-ssu-kow, taken in July.

*Distribution.* SIKHIM; WESTERN CHINA.

## Genus EUTELIA.

Hübn.; Hampson Fauna, Brit. Ind., Moths, ii, p. 390 (1894).

### 1169. *Eutelia geyeri.*

*Eurhipia geyeri*, Feld., Reis. Nov. Lep., pl. cx. fig. 23 (1874).
*Penicillaria guyra*, Leech, Proc. Zool. Soc. Lond., 1889, p. 536.

I obtained specimens at Ningpo in April, and Mr. Andrews obtained the species at Hakodate in July. There were some examples from Oiwake in Pryer's collection, and I have received others from Ta-chien-lu. I have also specimens from Sultanpore, Kulu, and I believe that this species has not hitherto been recorded from India.

*Distribution.* KULU; EASTERN and WESTERN CHINA; JAPAN; YESSO.

### 1170. *Eutelia inextricata.*

*Eutelia inextricata*, Moore, Descr. Ind. Lep. Atk., ii, p. 147 (1882); Hampson, Fauna Brit. Ind., Moths, ii, p. 395 (1894).

There was one example in Pryer's collection, and I have

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received one from Ta-chien-lu. These agree well with the specimens in my series from the north-west Himalayas.

*Distribution.* NORTHERN CHINA; NORTH-WEST HIMALAYAS; SIKHIM; ASSAM; CEYLON (*Hampson*); WESTERN CHINA; JAPAN.

Subfamily *STICTOPTERINÆ.*

Genus RISOBA.

Moore, Proc. Zool. Soc. Lond., 1881, p. 328.

1171. *Risoba obstructa.*

*Risoba obstructa*, Moore, Proc. Zool. Soc. Lond., 1881, p. 328; Lep. Ceyl., iii, p. 2, pl. cxliv, figs. 2, 2a, 2b (1884); Hampson, Fauna Brit. Ind., Moths, ii, p. 398 (1894).

*Risoba vialis*, Moore, Lep. Atk., p. 91, pl. iv. fig. 1 (1882).

*Risoba prominens*, Moore, Proc. Zool. Soc. Lond., 1881, p. 329.

There was one specimen from Loochoo, in Pryer's collection; I received one example from Chang-yang, taken in June.

*Distribution.* Throughout PENINSULAR INDIA, CEYLON, and BURMA; MALACCA; JAVA (*Hampson*); NORTHERN and CENTRAL CHINA; LOOCHOO.

1172. *Risoba trimaculata.*

*Thyatira trimaculata*, Brem., Lep. Ost.-Sib., p. 47, pl. v, fig. 5 (1864).

*Thyatira trimaculata*, var. *chinensis*, Leech, Entom., xxiii, p. 113 (1890).

*Thyatira trimaculata*, var. *albomaculata*, Leech, l. c., p. 114.

I have examples of the *chinensis* form from Ichang, Chang-yang, Wa-ssu-kow, and the province of Kwei-chow; these were taken in June, July, and August. I have not received any other specimens of the white-spotted form, *albomaculata*, the type of which was obtained at Ichang in August. There is one example of the typical form from Shanghai in the National Collection at South Kensington; I have two specimens of typical *trimaculata*, one from Kiukiang and the other from Moupin.

*Distribution.* AMURLAND; COREA; CENTRAL, EASTERN, and WESTERN CHINA.

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Genus STICTOPTERA.

Guen.; Hampson, Fauna Brit. Ind., Moths, ii, p. 400 (1894).

1173. *Stictoptera costata.*

*Lophoptera costata*, Moore, Lep. Ceyl., iii, p. 123, pl. clix, fig. 8 (1885).
*Stictoptera costata*, Hampson, Fauna Brit. Ind., Moths, ii, p. 403 (1894).

One specimen from Chia-ting-fu, taken in June or July.
*Distribution.* NORTH-WEST HIMALAYAS; CEYLON (*Hampson*); WESTERN CHINA.

Subfamily *GONOPTERINÆ.*

Genus COSMOPHILA.

Boisd.; Hampson, Fauna Brit. Ind., Moths, ii, p. 408 (1894).

1174. *Cosmophila erosa.*

*Anomis erosa*, Hübn., Zutr. Samml. exot. Schmett., ii, 19, figs. 287, 288.
*Cosmophila xanthindyma*, Boisd., Faun. Ent. Madag. Lép., p. 94, pl. xiii, fig. 7 (1834); Leech, Proc. Zool. Soc. Lond., 1889, p. 505.
*Cosmophila erosa*, Hampson, Fauna Brit. Ind., Moths, ii, p. 411 (1894).

Pryer's specimens were from Yokohama. I have also examples from Ichang, taken in June and August, and from the province of Kwei-chow, taken in June or July.
*Distribution.* UNITED STATES; W. INDIES; S. AFRICA: MADAGASCAR; MAURITIUS;—Throughout the ORIENTAL REGION; AUSTRALIA (*Hampson*); JAPAN; CENTRAL, NORTHERN, and WESTERN CHINA; AMURLAND.

1175. *Cosmophila sabulifera.*

*Gonitis sabulifera*, Guen., Noct., ii, p. 404 (1852).
*Gonitis involuta*, Walk., Cat. Lep. Het., xiii, p. 1003 (1857); Moore, Lep. Ceyl., iii, p. 85, pl. cliii, fig. 7 (1884); Leech, Proc. Zool. Soc. Lond., 1889, p. 505.
*Cosmophila sabulifera*, Hampson, Fauna Brit. Ind., Moths, ii, p. 409 (1894).

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*involuta* form.

*Distribution.* Throughout AFRICA; ADEN; INDIA; CEYLON, and BURMA (*Hampson*); JAPAN.

### 1176. *Cosmophila mesogona.*

*Gonitis mesogona*, Walk., Cat. Lep. Het., xiii, p. 1002 (1857).
*Cosmophila mesogona*, Hampson, Fauna Brit. Ind., Moths, ii, p. 408 (1894).
*Gonitis fructifera*, Leech, Proc. Zool. Soc. Lond., 1889, p. 505.

A native collector obtained specimens at Gensan in September, and there were examples from Yokohama in Pryer's collection. I have also received the species from Kiukiang, Ichang, and Ta-chien-lu, taken in June and July.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; JAVA (*Hampson*); JAPAN; COREA; CENTRAL and WESTERN CHINA.

### 1177. *Cosmophila fulvida.*

*Anomis fulvida*, Guen., Noct., ii, p. 397 (1852).
*Gonitis fulvida*, Moore, Lep. Ceyl., ii, p. 85, pl. clv. figs. 3, 3a (1884).
*Gonitis combinans*, Walk., Cat. Lep. Het., xiii, p. 1001 (1859); Leech, Proc. Zool. Soc. Lond., 1889, p. 506.
*Cosmophila fulvida*, Hampson, Fauna Brit. Ind., Moths, ii, p. 409 (1894).

There was a fine and variable series from Yokohama and Loochoo in Pryer's collection; I obtained the species at Nagasaki in June and at Fushiki in July, and I have received specimens from Kiukiang also taken in July.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; JAVA; AUSTRALIA; SOLOMONS; FIJI; SAMOA (*Hampson*); JAPAN; KIUSHIU; LOOCHOO; CENTRAL CHINA.

## Genus GONIOCRASPIDUM.

Hampson, Fauna Brit. Ind., Moths, ii, p. 416 (1894).

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1178. *Goniocraspidum pryeri.*

*Gonitis pryeri*, Leech, Proc. Zool. Soc. Lond., 1889, p. 506, pl. lii, fig 8.

The type of this species, a female specimen from Gifu, was in Pryer's collection.

*Habitat.* JAPAN.

*G. ennomoide*, Hampson from Dharmsála is very closely allied.

Genus CLETHROPHORA.

Hampson, Fauna Brit. Ind., Moths, ii, p. 416 (1894).

1179. *Clethrophora distincta.*

*Gonitis distincta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 506, pl. lii, fig. 7.
*Clethrophora distincta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 416 (1894).

There was a series in Pryer's collection, but without exact locality. I took one example at Nagahama and two at Gensan in July.

Snellen (Tijd. xxxviii, p. 207) considers that *Gonitis viridis*, Heyl. from Java (C. R. Ent. Belg. 1890, p. xxx) is synonymous with this.

*Distribution.* SIKHIM (*Hampson*); JAPAN; COREA.

Genus SCOLIOPTERYX.

German Syst. Gloss. Prod., p. 14 (1811).

1180. *Scoliopteryx libatrix.*

*Bombyx libatrix*, Linn., Syst. Nat., x, p. 537.
*Noctua libatrix*, Hübn., Noct., fig. 436.
*Gonoptera libatrix*, Leech, Proc. Zool. Soc. Lond., 1889, p. 505.

Specimens in Pryer's collection from Yesso, Yokohama, Oiwake, and Gifu; I obtained the species at Gensan in July, and I have received examples from Ta-chien-lu, Wa-shan, Pu-tsu-fong, and Chia-kou-ho.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA: WESTERN CHINA.

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### Genus CAREA.

Walk.; Hampson, Fauna Brit. Ind., Moths, ii, p. 421 (1894).

#### 1181. *Carea* (?) *variegata*, sp. n.

Primaries pale ochreous suffused with greyish; basal third clouded with blackish, and limited by a curved black line; postmedial line obscure, outwardly oblique from costa to vein 4, thence turned abruptly inwards to just below vein 2, and then curved and recurved to the inner margin, the oblique portion of the line above vein 4 is black except on the costal area, and there is a ferruginous-brown streak extending from the black line to the apex of the wing; the outer marginal area between the streak and vein 4 is clear ochreous; reniform stigma outlined in blackish but the outer edge is not clearly defined. Fringes greyish-brown marked with paler and preceded by a blackish line. Secondaries ochreous tinged with fuscous on basal half. Under surface ochreous; primaries have a blackish discal spot, two brownish clouds, on outer marginal area—one at the apex and the other at the angle of the wing; the secondaries are obscurely clouded with fuscous on the outer marginal area.

Expanse 44 millim.

One male specimen from Chou-pin-sa and a female from Chia-ting-fu. July.

As the female is in better condition than the male example, I have described it.

*Habitat.* WESTERN CHINA.

### Genus GELASTOCERA.

Butl., Ann. and Mag. Nat. Hist., (4) xx, p. 476 (1877).

#### 1182. *Gelastocera exusta.*

*Gelastocera exusta*, Butl., Ann. and Mag. Nat. Hist., (4) xx, p. 476; Leech, Trans. Ent. Soc. Lond., 1898, p. 316.

I have included this genus and species in the Notodontidæ. Hampson (Moths of India, ii, p. 427) places the genus in the Gonopterinæ.

## Subfamily *QUADRIFINÆ.*

### Genus MOMA.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 435 (1894).

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### 1183. *Moma champa.*

*Moma champa*, Moore, Proc. Zool. Soc. Lond., 1879, p. 403, pl. xxxiii, fig. 2; Hampson, Fauna Brit. Ind., Moths, ii, p. 435 (1894).

*Moma (Diphthera) champa*, Alph., Rom. sur Lép., ix, p. 158, pl. xiii, fig. 4 (1897).

I have one male specimen from Chang-yang, and one female from the island of Kiushiu. July and August.

Alphéraky states that he has a pair of this species bred from larvæ by Mr. Jankowski in Amurland.

*Distribution.* NORTH-WEST HIMALAYAS; PUNJAB; NILGIRIS; CEYLON (*Hampson*); CENTRAL CHINA; KIUSHIU; AMURLAND.

## Genus TRISULOIDES.

Butl., Ann. and Mag. Nat. Hist., (5) vii, p. 36 (1881).

### 1184. *Trisuloides sericea.*

*Trisuloides sericea*, Butl., Ann. and Mag. Nat. Hist., (5) vii, p. 36 (1881); Hampson, Fauna Brit. Ind., Moths, ii, p. 436 (1894).

*Trisuloides catocalina*, Moore, Proc. Zool. Soc. Lond., 1883, p. 17.

One female specimen taken at Chang-yang in July.

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM; SHILLONG (*Hampson*); CENTRAL CHINA.

## Genus TAMBANA.

Moore, Lep. Atk., p. 155 (1882).

### 1185. *Tambana c-album*, sp. n.

Primaries fuliginous brown with transverse black lines; sub-basal line short; antemedial line double, angulated about the middle and before the inner margin; postmedial double, wavy, angulated on costal area, terminating about the middle of the inner margin; submarginal line wavy, dentate, outwardly bordered with pale brown; a marginal series of black lunules; reniform stigma outlined in white except on its inner edge, thus representing a c-like mark; orbicular stigma outlined in black; a white mark on costa above the reniform, in some specimens this becomes a blotch extending to end of the cell. Secondaries orange with broad black marginal border and suffused

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with blackish on basal area; fringes black chequered with greyish. Under surface orange; outer half of primaries black with a spot of the ground-colour at end of the cell; secondaries suffused with greyish on the costal area and on the fuscous outer marginal border, discal dot black.

Expanse 50 millim.

Eleven female specimens from Chang-yang. July and August.

*Habitat.* CENTRAL CHINA.

### 1186. *Tambana variegata.*

*Tambana variegata*, Moore, Lep. Atk., p. 155 (1882).
*Trisuloides variegata*, Hampson, Fauna Brit. Ind., Moths, ii, p. 436 (1894).

Two specimens from Omei-shan, taken in June or July.

These examples are more variegated with white than the type, and the border of the yellow secondaries is blackish and more clearly defined.

*Distribution.* SIKHIM; WESTERN CHINA.

## Genus APLECTOIDES.

Butl., Ann. and Mag. Nat. Hist., (5) i, p. 193 (1878).

### 1187. *Aplectoides caliginea.*

*Aplectoides caliginea*, Butl., Trans. Ent. Soc. Lond., 1881, p. 185.

The type was from Tokio. There were three specimens in Pryer's collection; I obtained a series, at sugar, at Gensan in July, and I have received examples from Chang-yang, Ichang, Ta-chien-lu, Wa-shan, Chia-kou-ho, and Omei-shan.

*Distribution.* JAPAN; COREA; AMURLAND; CENTRAL and WESTERN CHINA.

### 1188. *Aplectoides nitida.*

*Aplectoides nitida*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 194 (1878); Ill. Typ. Lep. Het., iii, p. 16, pl. xlv, fig. 1 (1879).

A series from Yokohama in Pryer's collection. I have

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also specimens from Ta-chien-lu, Wa-ssu-kow, Ni-tou, Chia-ting-fu, Wa-shan, and Pu-tsu-fong. There is also a smaller example from Moupin; this has the ground colour vinous-brown with only the typical black markings showing; the ashy-grey thorax contrasts strongly with the colour of the primaries, thus giving the insect a conspicuous appearance. I propose the name *moupinensis* for this form.

*Distribution.* JAPAN; WESTERN CHINA.

### 1189. *Aplectoides obscura*, sp. n.

Primaries dark grey powdered with black scales; reniform and orbicular stigmata rather paler outlined in black; ante- and post-medial lines black and wavy, a narrow black band between them equidistant on the costa but approximating to postmedial line towards inner margin; submarginal line black, diffuse, wavy and dentate, followed by a grey shade. Secondaries sordid white suffused with fuscous on outer margin with indications of a dusky submarginal band. Fringes blackish. Under surface whitish, more or less suffused with fuscous especially on the primaries; all the wings have a blackish, narrow, postmedial band; the primaries have a pale spot at the end of the cell, and the secondaries have a blackish discal mark.

Expanse 46–48 millim.

Three male specimens and seven females from China, and an example of the latter sex from Sultanpore, Kulu.

The localities are Chang-yang, Ni-tou, Chow-pin-sa, Chia-kou-ho, Ta-chien-lu, Wa-ssu-kow, and Wa-shan. June and July.

*Distribution.* CENTRAL and WESTERN CHINA; KULU.

## Genus CATOCALA.

Schrank. Fauna Boica, ii, 2, p. 158 (1802).

### 1190. *Catocala nivea.*

*Catocala nivea*, Butl., Cist. Ent., ii, p. 241 (1877); Ill. Typ. Lep. Het., ii, pl. xxxiii, fig. 4 (1878); Hampson, Fauna Brit. Ind., Moths, ii, p. 442 (1894).

I have specimens from Yokohama, Oiwake, Nikko, Hakodate, Ichang, and Chang-yang. It occurs in July, and is found resting on the trunks of *Criptomeria*, with the bark of which it does not harmonize so well as it would do

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with that of the young oak trees around on which it never appears to settle.

*Distribution.* THUNDIÁNI; PUNJAB (*Hampson*); JAPAN; YESSO; CENTRAL CHINA.

1191. *Catocala lara.*

*Catocala lara*, Brem., Lep. Ost-Sib., p. 59, pl. iv, fig. 13 (1864).

The series in Pryer's collection was from Yesso, and probably obtained at Hakodate; the species is also recorded from Tokio.

*Distribution.* AMURLAND; JAPAN; YESSO.

1192. *Catocala actæa.*

*Catocala actæa*, Feld., Reise Nov. Lep., iv, pl. cxii, fig. 22 (1874).

I have specimens from Yokohama, Tokio, Nikko, Fushiki, Ichang, Chang-yang, and Kiukiang. The species occurs from July to October.

*Distribution.* JAPAN; CENTRAL CHINA.

1193. *Catocala dissimilis.*

*Catocala dissimilis*, Brem., Lep. Ost-Sib., p. 60, pl. iv, fig. 15 (1864).

There were specimens from Yesso in Pryer's collection, and I obtained the species at Hakodate, and have received it from Ichang and Chang-yang. It occurs in August. These agree well with Amurland examples in my collection.

*Distribution.* AMURLAND; YESSO; CENTRAL CHINA.

1194. *Catocala sancta.*

*Catocala sancta*, Butl., Cist. Ent., iii, p. 134 (1885).

Two specimens from Yesso in Pryer's collection.

*Habitat.* YESSO.

1195. *Catocala electa.*

*Noctua electa*, Borkh., Eur. Schmett., iv, p. 26; Hubn., Noct., fig. 331.

*Catocala zalmunna*, Butl., Cist. Ent., iii, p. 241 (1877); Ill. Typ. Lep. Het., iii, p. 25, pl. xlvii, fig. 3 (1879).

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*Catocala electa*, Leech, Proc. Zool. Soc. Lond., 1889, p. 550.

I took this species at Gensan in July, Hakodate in August, and Sendai in September; the specimens in Pryer's collection were from Yokohama, Oiwake, and Yesso; examples have also been recorded from Nikko, Tokio, and Saporo, and I have a nice series from Chang-yang, taken in July.

Japanese specimens range from 75 to 86 millim. in expanse; the colour of the primaries varies from silvery-grey through ochreous-grey to dark grey (Gensan examples), and there are some slight differences in the width of the band on secondaries.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA; CENTRAL CHINA.

### 1196. *Catocala concubia.*

*Catocala concubia*, Walk., Cat., xiii, p. 1210 (1857); Butl., Ill. Typ. Lep. Het., vi, pl. cx, fig. 10 (1886); Hampson, Fauna Brit. Ind., Moths, ii, p. 442 (1894).

I have specimens from Ta-chien-lu and the province of Kwei-chow, taken in June.

*Distribution.* NORTH-WEST HIMALAYAS (*Hampson*); WESTERN CHINA.

### 1197. *Catocala nupta.*

*Noctua nupta*, Linn., Syst. Nat., xii, p. 841; Hübn., Noct., fig. 300.

*Catocala nupta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 441 (1894).

*Catocala nupta*, var. *obscurata*, Oberth., Etud. d'Entom., v, p. 86 (1880).

There was a specimen from Yesso in Pryer's collection, and Oberthür describes a variety of the species from the Isle of Askold and North China; the latter has the primaries darker than typical examples.

*Distribution.* EUROPE.—AMURLAND; NORTH CHINA; YESSO.

### 1198. *Catocala dula.*

*Catocala dula*, Brem., Lep. Ost-Sib., p. 59, pl. iv, fig. 14 (1864).

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p. 585 (1892).

The specimens in Pryer's collection were from Ye
and the Kurile Islands. I obtained the species in so
numbers at Hakodate in August and at Sendai
September, and have received examples from Mr. Man
of Yokohama.

Varies in colour and intensity of the markings
primaries.

I do not agree with Staudinger in considering this
be a form of *C. sponsa*, from which it can be at o
distinguished by the pure white and broader bands of
under surface.

*Distribution.* AMURLAND; JAPAN; YESSO; KUR
ISLANDS.

1199. *Catocala jonasi.*

*Catocala jonasii*, Butl., Cist. Ent., ii, p. 242 (1877); Ill. T
Lep. Het., ii, p. 39, pl. xxxiii, fig. 6 (1878).

I obtained this species at Fushiki and Tsuruga in Ju
and at Nikko in September.

*Habitat.* JAPAN.

1200. *Catocala scortorum.*

*Catocala scortorum*, Christ., Iris., vi, p. 94 (1893).
*Catocala scortum*, Alph., Rom. sur Lép., ix, p. 162, pl.
fig. 4 ♀ (1897).

Described from Sidemi. I have one example from
chien-lu, taken in July. Excepting that the central b
of secondaries is rather broader my specimen agrees v
well with Alphéraky's figure of this conspicuous specie

*Distribution.* EUROPE.—AMURLAND; WESTERN CHI

1201. *Catocala volcanica.*

*Catocala volcanica*, Butl., Cist. Ent., ii, p. 244 (1877);
Typ. Lep. Het., ii, p. 40, pl. xxxiii, fig. 10 (1878).

Pryer's specimens were from Oiwake and Yokoha
I obtained the species at Fushiki in July, at Hakodat
September, and have received it from Kiukiang wher
occurs in July.

*Distribution.* JAPAN; YESSO; CENTRAL CHINA.

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### 1202. *Catocala obscena.*

*Catocala obscena*, Alph., Rom. sur Lép., ix, p. 176, pl. x, fig. 2 ♂ (1897).

Alphéraky describes this species from Corea; one example of each sex taken in September.

*Habitat.* COREA.

### 1203. *Catocala mirifica.*

*Catocala mirifica*, Butl., Cist. Ent., ii, p. 243 (1877); Ill. Typ. Lep. Het., ii, p. 39, pl. xxxiii, fig. 7 (1878).
*Catocala largeteaui*, Oberth., Etud. d'Entom., vi, p. 22, pl. viii, fig. 8 (1881).

A fine series of the type form from Yokohama in Pryer's collection. The *largeteaui* form, of which I have specimens from Omei-shan, Ni-tou, Pu-tsu-fong, Ta-chien-lu, and the province of Kwei-chow, is rather darker and the costal blotch is often entirely absent.

*Distribution.* JAPAN; WESTERN CHINA.

### 1204. *Catocala invasa*, sp. n.

Male. Primaries greyish clouded and suffused with brownish; basal line, short, angled, black; antemedial line, black, oblique, slightly waved and forming an obtuse angle before inner margin; postmedial line black, sinuous, sharply angled just below the costa, bidentate above the middle, a deep and expanding inward projection below the middle, and an acute angle before the inner margin; reniform outlined in blackish, its exterior edge black with rays of the same colour projected in the direction of postmedial line; fringes preceded by an interrupted black line and intersected towards apex by some black streaks. Secondaries yellow with black markings similar to those of *C. mirifica*, Butl., but the central band is more curved and the longitudinal streak broader. Under surface similar to that of *C. mirifica*.

Female. Basal area of primaries darker, thus contrasting strongly with the pale central portion of the wing.

Expanse ♂ 60 millim, ♀ 66 millim.

One male specimen from Chia-ting-fu and one female example from Chang-yang. July.

*Habitat.* CENTRAL and WESTERN CHINA.

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1205. *Catocala omphale.*

*Catocala omphale*, Butl., Trans. Ent. Soc. Lond., 1881, p. 195.

Described from Tokio. Pryer's specimens were from Yesso.

*Habitat.* JAPAN and YESSO.

1206. *Catocala armandi.*

*Catocala davidi*, Pouj., Bull. Soc. Ent. France, 1887, p. xxxviii.

*Catocala armandi*, Pouj., Bull. Soc. Ent. France, 1888, p. ccviii.

Described from a single female specimen from Moupin. This species seems to be nearly allied to *C. inconstans*, Butl. = *patala*, Feld.

*Habitat.* WESTERN CHINA.

1207. *Catocala hampsoni*, sp. n.

Differs from *C. patala*, Feld., in the contour of the transverse lines of the primaries; the antemedial being more wavy and less oblique, and the postmedial not so strongly angulated especially towards the inner margin. The medial black band of secondaries is narrower and terminates nearer the anal angle, the marginal border is broader; there is no black discal dot on the under surface of the secondaries.

Expanse 70 millim.

One male specimen taken at Chang-yang in July.

*Habitat.* CENTRAL CHINA.

1208. *Catocala esther.*

*Catocala esther*, Butl., Cist. Ent., ii, p. 243 (1877); Ill. Typ. Lep. Het., ii, p. 40, pl. xxxiii, fig. 9 (1878).

Occurs at Yokohama, Tokio, Shimonoseki, Tsuruga, Nagahama, in the island of Kiushiu, and also at Gensan, Che-kiang, Kiukiang, and Ta-chien-lu. July.

*Distribution.* JAPAN; COREA; EASTERN, WESTERN, and CENTRAL CHINA; AMURLAND.

1209. *Catocala bella.*

*Catocala bella*, Butl., Cist. Ent., ii, p. 242 (1877); Ill. Typ. Lep. Het., iii, pl. xlvi, fig. 10 (1879).

*Catocala serenides*, Staud., Stett. ent. Zeit., 1888, p. 268; Rom. sur Lép., vi, p. 589, pl. xi, fig. 6 (1892).

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The specimens in Pryer's collection were from Oiwake; Butler's type was from Yokohama. Occurs in July and August.

I have a series of seven Japanese specimens, and these compared with six Amurland examples in my collection are slightly more ashy-grey in the colour of primaries. This colour difference is not of sufficient importance to merit a varietal name.

*Distribution.* JAPAN; AMURLAND.

1210. *Catocala separans.*

*Catocala separans*,, Leech, Proc. Zool. Soc. Lond., 1889, p. 552, pl. liii, fig. 6.

I have two examples, both taken by myself in July, one at Nagahama and the other at Fushiki.

*Habitat.* JAPAN.

1211. *Catocala duplicata.*

*Catocalu duplicata*, Butl., Cist. Ent., iii, p. 135 (1885).

There were specimens from Oiwake and Yesso in Pryer's collection; I obtained the species at Nagahama and Tsuruga in July.

*Habitat.* JAPAN and YESSO.

1212. *Catocala ella.*

*Catocala ella*, Butl., Cist. Ent., ii, p. 242 (1877); Ill. Typ. Lep. Het., ii, p. 39, pl. xxxiii, fig. 5 (1878).
*Catocala nutrix*, Graeser, Berl. Ent. Zeit., 1888, p. 374.

I have specimens from Yokohama, Yesso, Ta-chien-lu, and Wa-shan. Occurs in July and August.

The black bands of secondaries are subject to considerable variation; in some examples almost the entire wing is suffused with black.

*Distribution.* JAPAN; YESSO; AMURLAND; WESTERN CHINA.

1213. *Catocala intacta.*

*Catocala intacta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 548, pl. liii, fig. 7.

Described from a specimen taken in July at Nagahama.



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This species is allied to *C. ella*, Butl., not to *C. dula* as previously stated.

*Habitat.* JAPAN.

1214. *Catocala connexa.*

*Catocala connexa*, Butl., Trans. Ent. Soc. Lond., 1881, p. 196.

*Catocala nubila*, Butl., l. c.

The type was from Tokio and the specimens in Pryer's collection from Oiwake.

I met with the species commonly in the month of August at Hakodate, and obtained specimens at Sendai in September.

The colour variation ranges from pale silvery-grey with well-defined markings, to an almost uniform dark ashy-grey. One ochreous-grey example from Hakodate has the space between the central transverse lines filled in with blackish, thus forming a broad fascia.

*Habitat.* JAPAN and YESSO.

1215. *Catocala butleri*, sp. n.

Closely allied to *C. connexa*, Butl., but larger in size. The antemedial line of primaries is more sinuous and less oblique; the postmedial and submarginal lines are more sharply dentate. On the secondaries the black markings are rather broader, and the central band almost unites with the marginal border about the middle and towards the abdominal margin. The space between the ante- and postmedial line of primaries is clouded with pale greyish-brown in the male and with white in the female.

Expanse 72 millim.

A male specimen from the province of Kwei-chow and a female from Pu-tsu-fong, both taken in July.

*Habitat.* WESTERN CHINA.

1216. *Catocala prægnax.*

*Catocala prægnax*, Walk., Cat. Lep. Het., xiii, p. 1213 (1857); Butl., Ill. Typ. Lep. Het., iii, p. 25, pl. xlvi, fig. 11 (1879).

Walker's type was from North China. I obtained two specimens at Gensan in July.

Probably this is specifically identical with *C. obliterata*, Mén.

*Distribution.* NORTH CHINA; COREA.

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1217. *Catocala davidi.*

*Catocala davidi*, Oberth., Etud. d'Entom., vi, p. 22, pl. viii, fig. 7 (1881).

*Habitat.* NORTH CHINA.

1218. *Catocala hymenæa.*

*Noctua hymenæa*, Schiff., Syst. Verz., p. 91; Hübn., Noct., fig. 340.
*Catocala hymenæa*, Treit., Schmett., v, p. 373.

I obtained two examples at Gensan in July.
*Distribution.* EUROPE.—AMURLAND; COREA.

1219. *Catocala paranympha.*

*Noctua paranympha*, Linn., Syst. Nat., xii, p. 842.
*Catocala xarippe*, Butl., Cist. Ent., ii, p. 243 (1877); Ill. Typ. Lep. Het., ii, pl. xxxiii, fig. 8 (1878).
*Catocala paranympha*, Leech, Proc. Zool. Soc. Lond., 1889, p. 552.

Butler's type of *xarippe* was from Hakodate. I obtained specimens at Tsuruga, Nagahama, Sendai, Yokohama and Gensan.

Except that they are rather larger, the Japanese specimens do not exhibit any important differences from European examples.

*Distribution.* EUROPE.—AMURLAND; COREA; JAPAN; YESSO.

1220. *Catocala mabella.*

*Catocala mabella*, Holl., Trans. Amer. Ent. Soc., xvi, p. 75 (1889).

There were six specimens in Pryer's collection from Oiwake, and my native collector obtained one example in the island of Kiushiu.

*Habitat.* JAPAN and KIUSHIU.

1221. *Catocala columbina*, sp. n.

Primaries dove-grey; basal line short, black, united with a short black streak on costa; antemedial line whitish, very wavy and bordered externally with black which forms a conspicuous patch on the costa; postmedial line black, angled just below the costa,

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bidentate above the middle, thence sinuous to inner margin above which it forms a triangular mark ; reniform whitish partly filled in with blackish and outlined in black, just below it is a pyriform whitish spot outlined in black, and just above it there is a blackish cloud on costa from which a dusky transverse shade extends to the inner margin ; another similar transverse shade follows the post-medial line and there are some clouds of the same colour on the outer marginal area ; the costa is whitest at apex and about the middle ; fringes dark greyish preceded by a black line with black and white dots upon it. Secondaries yellow with a black central band and marginal border, the former is curved below the middle of the wing and unites with a black longitudinal streak, the latter is broad towards the costa and contracted before anal angle, the yellow ground-colour shows on the outer margin below outer angle and at the narrow part of the black border ; fringes whitish chequered with blackish between veins 2 and 6.

Under surface straw-colour, the basal area of secondaries tinged with yellow ; all the wings have a black transverse band and marginal border.

Expanse 58–62 millim.

Three male specimens and one female from Omei-shan, and thirteen examples, including both sexes, from Chang-yang. June and July.

*Habitat.* CENTRAL and WESTERN CHINA.

### 1222. *Catocala triphænoïdes.*

*Catocala triphænoïdes*, Oberth., Etud. d'Entom., vi, p. 21, pl. viii, fig. 5 (1881).

Described from a male specimen taken at Ngankiak.

*Habitat.* NORTH CHINA.

### 1223. *Catocala puella.*

*Catocala puella*, Leech, Proc. Zool. Soc. Lond., 1889, p. 551, pl. liii, fig. 5.

Described from Gensan. The type specimen was taken in July, and is the only example of the species that I have seen.

*Habitat.* COREA.

## Genus BATRACHARTA.

Walker, Journ. Linn. Soc., vi, p. 196 (1862).

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1224. *Batracharta cossoides.*

*Carissa cossoides*, Walk., Journ. Linn. Soc., vii, p. 168.

One male specimen taken in May at Kiukiang.
*Distribution.* BORNEO; CENTRAL CHINA.

Genus ERYGIA.

Guen.; Hampson, Fauna Brit. Ind., Moths, ii, p. 444 (1894).

1225. *Erygia apicalis.*

*Erygia apicalis*, Guen., Noct., iii, p. 50 (1852); Hampson, Fauna Brit. Ind., Moths, ii, p. 445 (1894).
*Calicula exempta*, Walk., Cat. Lep. Het., xv, p. 1808 (1858).
*Calicula squamiplena*, Walk., l. c.
*Dianthœcia geometroides*, Walk., Cat., xxxiii, p. 722 (1865).

Six specimens in Pryer's collection, five of which were without exact locality, and the sixth was ticketed from Loochoo; my native collector obtained one example at Gensan in August, and I have received one specimen from Ta-chien-lu.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; JAVA; AUSTRALIA (*Hampson*); JAPAN; COREA; WESTERN CHINA.

Genus SYPNA.

Guenée, Noct., iii, p. 144 (1852).

1226. *Sypna dubitaria.*

*Tavia dubitaria*, Walk., Cat. Lep. Het., xxxiii, p. 939 (1865).
*Sypna omicronigera* (part.), Hampson, Fauna Brit. Ind., Moths, ii, p. 446 (1894).

Two male specimens and one female from Chia-kou-ho, one male from Omei-shan; all taken in July.

This appears to be quite distinct from *S. omicronigera*, Guen., with which Hampson places it.

*Distribution.* NORTH-WEST HIMALAYAS (*Hampson*); WESTERN CHINA.

1227. *Sypna mormoides.*

*Sypna mormoides*, Butl., Trans. Ent. Soc. Lond., 1881, p. 202; Ill. Typ. Lep. Het., vi, p. 40, pl. cxi, fig. 2 (1886).

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*Sypna omicronigera* (part.), Hampson, Fauna Brit. Ind., Moths, ii, p. 446 (1894).

One male specimen from Wa-shan, and a female example from Chia-kou-ho, both taken in July.

*Distribution.* SIKHIM; WESTERN CHINA.

### 1228. *Sypna picta.*

*Sypna picta*, Butl., Cist. Ent., ii, p. 244 (1877); Ill. Typ. Lep. Het., ii, p. 40, pl. xxxiii, fig. 2 (1878).
*Sypna achatina*, Butl., Cist. Ent., ii, p. 245; Ill. Typ. Lep. Het., iii, p. 26, pl. xlvii, fig. 7 (1879).
*Sypna fumosa*, Butl., Cist. Ent., ii, p. 245; Ill. Typ. Lep. Het., ii, p. 41, pl. xxxiii, fig. 3 (1878).
*Sypna fuliginosa*, Butl., Cist. Ent., p. 245; Ill. Typ. Lep. Het., iii, p. 26, pl. xlvii, fig. 8 (1879).

I have examples of the type form from Yokohama, Oiwake, Kiushiu, Gensan, Ta-chien-lu, Pu-tsu-fong, and Ni-tou; of the *achatina* form from Yokohama, Oiwake, Satsuma, Ta-chien-lu, and Chia-kou-ho; and of the *fuliginosa* form from Yokohama, Oiwake, Kiushiu, Ta-chien-lu, and Ni-tou. *Fumosa*, Butl., seems to be a modification of var. *achatina*, and I have such specimens both from Western China and Japan.

My Amurland series comprises representatives of each of the named forms as well as typical examples, but all the specimens are smaller in size than those from China and Japan.

*Distribution.* AMURLAND; COREA; WESTERN CHINA; JAPAN; KIUSHIU.

### 1229. *Sypna prunosa.*

*Sypna prunosa*, Moore, Proc. Zool. Soc. Lond., 1883, p. 25.

Four male specimens and four females from Omei-shan, Wa-shan, and Chia-kou-ho, taken in July.

*Distribution.* DARJILING; WESTERN CHINA.

### 1230. *Sypna rectilinea.*

*Sypna rectilinea*, Moore, Proc. Zool. Soc. Lond., 1867, p. 70; Hampson, Fauna Brit. Ind., Moths, ii, p. 449 (1894).

Specimens from Ta-chien-lu, Omei-shan, Wa-shan,

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Pu-tsu-fong, Chia-kou-ho, Ni-tou, and Chang-yang. Occurs in June and July.

In the majority of these examples the space between the antemedial and medial lines is filled in with lilacine except on the costal area, all of them have the under surface darker than typical Indian specimens.

The form referred to may be known as var. *lilacina.*

*Distribution.* NORTH-WESTERN HIMALAYAS; CENTRAL and WESTERN CHINA.

### 1231. *Sypna kirbyi.*

*Sypna kirbyi*, Butl., Trans. Ent. Soc. Lond., 1881, p. 209; Waterhouse, Aid., ii, pl. clix, fig. 5 (1885).
*Sypna rectilinea* (part.), Hampson, Fauna Brit. Ind., Moths, ii, p. 449 (1894).

Eight male specimens and one female from Omei-shan, captured in June or July.

Hampson considers this and *S. prunosa* to be forms of *S. rectilinea*, Moore, but they appear to me to be quite distinct.

*Distribution.* SIKHIM; KULU; WESTERN CHINA.

### 1232. *Sypna simplex*, sp. n.

In colour and marking of both surfaces agrees almost exactly with *S. rectilinea*, Moore, but the antennæ are ciliate with paired bristles at each joint, instead of being fasciculate, and the fringes of all the wings are more crinulate.

Expanse 42-50 millim.

Five examples of each sex; four of these were obtained at Omei-shan, three on the high plateau to the north of Ta-chien-lu, one at Ni-tou, one in the province of Kwei-chow, and one at Kiukiang.

*Habitat.* CENTRAL and WESTERN CHINA.

### 1233. *Sypna hercules.*

*Gisira hercules*, Butl., Trans. Ent. Soc. Lond., 1881, p. 579.
*Sypna hercules*, Leech, Proc. Zool. Soc. Lond., 1889, p. 543.

I took one specimen at Hakodate in August; I have received one from Mr. Manley of Yokohama, and there was an example from Yesso in Pryer's collection. These differ from the type, which is in the National Collection at South

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Kensington, in having the space between ante- and post-medial lines filled in with whitish, except on the costal area.

*Habitat.* YESSO and JAPAN.

### 1234. *Sypna moorei.*

*Sypna moorei*, Butl., Trans. Ent. Soc. Lond., 1881, p. 209; Ill. Typ. Lep. Het., vi, p. 44, pl. cxii, fig. 2 (1886).
*Sypna curvilinea* (part.), Hampson, Fauna Brit. Ind., Moths, ii, p. 449 (1894).

One male specimen from Kiukiang, and a female from Ta-chien-lu.

*Distribution.* NORTH-WEST HIMALAYAS; CENTRAL and WESTERN CHINA.

### 1235. *Sypna curvilinea.*

*Sypna curvilinea*, Moore, Proc. Zool. Soc. Lond., 1867, p. 60, pl. vi, fig. 4.

One female specimen obtained on the high plateau to the north of Ta-chien-lu appears to be referable to this species.

*Distribution.* NORTH-WEST HIMALAYAS; WESTERN CHINA.

### 1236. *Sypna cyanivitta.*

*Sypna cyanivitta*, Moore, Proc. Zool. Soc. Lond., 1867, p. 70; Waterhouse, Aid., ii, pl. clix, fig. 4 (1885).
*Sypna brunnea*, Moore, Lep. Atk., p. 167 (1882); Waterhouse, l. c., fig. 3.

I have examples of the *brunnea* form from Wa-shan, Chia-kou-ho, and Omei-shan; these were taken in July.

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM (*Hampson*); WESTERN CHINA.

### 1237. *Sypna sobrina*, sp. n.

Antennæ strongly fasciculate. Primaries brown with a violet tinge, sub-basal and antemedial lines black, double, the latter dentate above median nervure; postmedial line black, double, angulated below costa, bidentate beyond cell, and dentate below vein 2, only the costal half of this line is usually distinct and there is sometimes

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a rather broad black medial band which is attenuated above the median nervure; submarginal line black, sharply angled below the middle; reniform stigma not well defined; orbicular white, punctiform; a fine lunulate black line, dotted with white, before the outer margin; fringes preceded by a wavy pale line. The discal area is traversed by irregular paler bands. Secondaries paler marked with black on abdominal margin; a short black line before anal angle; markings on outer margin as on primaries. Under surface pale brown suffused with fuscous especially on the outer marginal area; primaries have a pale discal lunule and diffuse blackish line beyond; secondaries have a pale discal dot and a double, angulated, blackish, medial line.

Expanse 64–68 millim.

In some examples the space between the antemedial line and medial band is powdered with greenish-grey scales except on the costal area. I propose the name *ornata* for this form.

Twelve male specimens and one female from Pu-tsu-fong, taken in June or July. Five of the males and the female example are referable to var. *ornata*.

*Habitat.* WESTERN CHINA.

Similar to *S. olena*, Swinhoe, but larger, the fascicles of antennæ are heavier, the submarginal line is more acutely angled, and the markings of the under surface are different.

### 1238. *Sypna olena.*

*Sypna olena*, Swinhoe, Ann. and Mag. Nat. Hist., (6) xii, p. 261 (1893).

I have a fine series of this species, comprising specimens from Wa-shan, Pu-tsu-fong, Chia-kou-ho, and the province of Kwei-chow. Occurs in July.

*Habitat.* CHINA (*Swinhoe*); WESTERN CHINA.

### 1239. *Sypna albistigma*, sp. n.

Closely allied to *S. astrigera*, Butl., but differs on the upper surface from that species in its browner coloration, bluish-white reniform stigma, more angulated submarginal line, and paler outer marginal area. On the under surface the postmedial band of primaries is oblique and not angled; the basal three-fourths of all the wings blackish, outer fourth light brown.

Expanse 48 millim.

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### 1240. *Sypna astrigera.*

*Sypna astrigera,* Butl., Cist. Ent., iii, p. 135 (1885)

The types were from Nikko and Chiuzenji.

I obtained specimens at Nagasaki in June; the exan in Pryer's collection were from Yokohama, and Mr. Ma has sent me others from the same locality.

*Habitat.* JAPAN and KIUSHIU.

### 1241. *Sypna punctosa.*

*Tavia punctosa,* Walk., Cat. Lep. Het., xxxiii, p. 939 (1
*Tavia submarginata,* Walk., l. c., p. 941.
*Sypna umbrosa,* Butl., Trans. Ent. Soc. Lond., 1881, p. Ill. Typ. Lep. Het., vi, pl. cxi, fig. 3 (1886).
*Sypna punctosa,* Hampson, Fauna Brit. Ind., Moth p. 447 (1894).

I obtained one example at Shimonoseki in July, specimens were taken by native collector in Kiushiu have also received specimens from Kiukiang, Chia-ko Wa-shan, and Ta-chien-lu.

The Shimonoseki specimen was referred to *S. astri* Butl., in my former paper; this was an error which I take the opportunity of correcting.

*Distribution.* NORTH-WEST HIMALAYAS; SIK SHILLONG; NILGIRIS; PIRMÁD; TRAVANCORE (*H son*); KIUSHIU; CENTRAL and WESTERN CHINA.

### 1242. *Sypna plaga,* sp. n.

Primaries dark brown; the first three transverse lines gree grey edged with black and rather broad, the antemedial is sli excurved below the median nervure and interrupted toward costa, the postmedial is excurved and interrupted beyond the ce expanded between veins 1 and 2; submarginal line black sinuous; reniform and orbicular stigmata greenish-grey, the f surrounded with marks of the same colour; marginal lu greenish-grey edged internally with black; four pale dots o costa towards apex. Secondaries pale brown suffused with fus medial line blackish indented about the middle; there are indic

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of a dusky postmedial band; marginal line black, lunular. Fringes agree in colour with the wings and are preceded by a pale crenulate line. Under surface pale brown tinged with fuscous; primaries have a blackish postmedial line which assumes band-like proportions between veins 4 and 7; submarginal band blackish, diffuse, widest towards the costa; secondaries have a blackish discal mark and two transverse lines, the outer angled about middle.

Expanse 52 millim.

One female specimen taken in June or July at Pu-tsu-fong.

*Habitat.* WESTERN CHINA.

### 1243. *Sypna marginata*, sp. n.

Primaries light brown clouded and irrorated, to a greater or lesser extent, with fuscous; transverse lines blackish, the first three interrupted and wavy; the space beyond the submarginal line is clear light brown; a series of black marginal dots; reniform stigma pale, not clearly defined; orbicular black, punctiform. Secondaries fuscous brown, marginal dots black, fringes light brown. Under surface light brown; the primaries are suffused with fuscous on the disk except around the discal mark; the secondaries are powdered with fuscous, discal mark edged with blackish.

Expanse 52 millim.

Eight male specimens and four females from Ta-chien-lu; three male examples and one female from Ni-tou. July and August.

In one male from Ta-chien-lu, three of the transverse lines, the marginal dots, and the reniform stigma are marked with white, thus giving the specimen some resemblance to *S. distincta*, from which it can easily be separated by the under surface characters. I propose the name *albipunctata* for this form.

*Habitat.* WESTERN CHINA.

### 1244. *Sypna distincta.*

*Sypna distincta*, Leech, Trans. Ent. Soc. Lond., 1889, p. 136, pl. ix, fig. 10.

This species was described from Kiukiang, and I have not received examples of it from any other locality.

*Habitat.* CENTRAL CHINA.

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Primaries obscure violet-brown, three of the black transverse lines interrupted and marked with white; sub-basal line almost straight, dotted with white on the costa, and at its termination before the median nervure; antemedial line indented, marked with white between the nervures, on the costa, and just above the inner margin; postmedial line curved and recurved, with seven white spots, the seventh double; submarginal line black, sinuous; the area beyond pale brown clouded with the ground-colour below the middle; a series of white spots outlined in black before the outer margin; orbicular stigma white, outlined in black, reniform stigma pale brown marked with black outlined white marks. Secondaries yellow suffused with blackish on basal and outer marginal areas; a black, angulated, medial line not extending to the costa, and a black diffuse band beyond, the latter indistinct from costa to vein 4; a series of black lunules on outer margin increasing in size towards anal angle; fringes clouded with black from vein 4 to anal angle. Under surface yellowish: primaries with a black discal mark, central curved band, and broad submarginal band, the latter diffuse towards costa and united with a quadrate patch on middle of the outer margin; secondaries have a black discal mark, angulated medial line, and curved band beyond; lunules on outer margin as above, but less distinct except at anal angle.

Expanse 54 millim.

One male specimen taken at Pu-tsu-fong in June or July.

*Habitat.* WESTERN CHINA.

### 1246. *Sypna quadrinotata*, sp. n.

Primaries greenish-grey, with a small violet-brown basal patch, limited by the black sub-basal line; medial band violet-brown enclosing the orbicular which is of the ground-colour outlined in black; reniform stigma not defined; antemedial line black, irregular, limiting the band internally; postmedial line black, strongly angled and dentated beyond the cell, thence turning in to the medial band and forming its outer border; submarginal line black, wavy, bidentate about the middle, where it traverses a quadrate violet-brown patch, preceded by an obscure violet-brown shade; marginal line black, wavy, with some pale specks on it. Secondaries blackish, paler on basal area which is defined by a buff-coloured band; fringes buff, marked and suffused with blackish towards anal angle. Under surface yellowish-buff; primaries have two black transverse lines and

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a black submarginal band which unites with a quadrate black patch on outer margin; secondaries have a discal mark and two transverse lines, all these are black as also is a broad band on submarginal area; marginal dots black.

Expanse 60 millim.

Three male specimens and one female from Pu-tsu-fong, two males from the province of Kwei-chow and one female from Chang-yang. June and July.

*Habitat.* CENTRAL and WESTERN CHINA.

### 1247. *Sypna mandarina*, sp. n.

On the upper surface this species is an almost counterpart of *S. panosa*, Moore, from India, but it is smaller, the dorsal tufts of abdomen are brown rather than black, the antennæ are bipectinate instead of fasciculate, the dark patch at outer angle of the primaries is differently shaped, and the fringes are less crenulate. The under surface is more suffused with fuscous, and the postmedial and submarginal lines of primaries are curved instead of being respectively straight and waved.

Expanse 50 millim.

Six male specimens taken at Chow-pin-sa in June.

*Habitat.* WESTERN CHINA.

### 1248. *Sypna watanabii.*

*Sypna watanabii*, Holl., Trans. Amer. Ent. Soc., xvi, p. 76 (1889)

I am unable to identify any *Sypna* in my collection with the description of *S. watanabii.*

*Habitat.* JAPAN.

## Genus HYPOCALA.

Guenée, Noct., iii, p. 73 (1852).

### 1249. *Hypocala subsatura.*

*Hypocala subsatura*, Guen., Noct., iii, p. 75 (1852).
*Hypocala aspersa*, Butl., Proc. Zool. Soc. Lond., p. 164 (1883).
*Hypocala subsatura*, var. *limbata*, Butl., Ill. Typ. Lep. Het., vii, p. 76, pl. cxxxi, fig. 13 (1899).

I have specimens referable to the typical form from Pu-tsu-fong and Chia-ting-fu; examples of *aspersa* from the

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same localities, also from Moupin and Chow-pin-sa; and var. *limbata* from Chow-pin-sa and Pu-tsu-fong. Appears to occur throughout the summer.

*Distribution.* NORTH-WESTERN and EASTERN HIMALAYAS; SYLHET (*Hampson*); WESTERN CHINA.

### 1250. *Hypocala moorei.*

*Hypocala moorei*, Butl., Ann. and Mag. Nat. Hist., (6) x, p. 21 (1892).

*Hypocala efflorescens*, Moore (*nec* Guen.), Lep. Ceyl., iii, pl. clx, figs. 5, 5a (1884).

Three male examples from the province of Kwei-chow, taken in June or July.

*Distribution.* WEST AFRICA; NORTH-WEST HIMALAYAS; SIKHIM; CANARA; CEYLON (*Hampson*); WESTERN CHINA.

## Genus ERCHEIA.

Walk., Cat. Lep. Het., xiii, p. 1107 (1857).

### 1251. *Ercheia umbrosa.*

*Ercheia umbrosa*, Butl., Trans. Ent. Soc. Lond., 1881, p. 194.

Described from a Tokio example; there were specimens from Nikko and Gifu in Pryer's collection, and I have received others from Kiukiang, Wa-shan, Chia-kou-ho, Ta-chien-lu, and the province of Kwei-chow.

*Distribution.* JAPAN; CENTRAL and WESTERN CHINA.

## Genus ANISONEURA.

Guenée, Noct., iii, p. 160 (1852).

### 1252. *Anisoneura hypocyanea.*

*Anisoneura hypocyanea*, Guen., Noct., iii, p. 162 (1852); Hampson, Fauna Brit. Ind., Moths, ii, p. 456 (1894).

One female example taken in July at Omei-shan.

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM; ASSAM (*Hampson*); WESTERN CHINA.

## Genus NYCTIPAO.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 458 (1894).

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1253. *Nyctipao crepuscularis.*

*Phalæna crepuscularis*, Linn., Syst. Nat., xii, p. 811; Clerck., Icon., pl. liii, fig. 1, 2.
*Nyctipao lætitia*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 291 (1878); Ill. Typ. Lep. Het., iii, p. 26, pl. xlvii, fig. 9 (1879).
*Nyctipao crepuscularis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 544; Hampson, Fauna Brit. Ind., Moths, ii, p. 461 (1894).

Pryer's examples were from Yokohama and the Loochoo Islands. I obtained the species in Satsuma and at Nagasaki in May, and at Tsuruga and Fushiki in July. It has also been recorded from Hakodate, and I have received specimens from Chang-yang, Kiukiang and Omei-shan.

Varies considerably in colour and markings, and to a lesser degree in expanse.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; SUMATRA; JAVA; BORNEO; PHILIPPINES (*Hampson*); LOOCHOO; JAPAN; YESSO; KIUSHIU; CENTRAL and WESTERN CHINA.

1254. *Nyctipao macrops.*

*Phalæna macrops*, Linn., Syst. Nat., xii, iii, p. 225 (1768).
*Noctua bubo*, Fabr., Sp. Ins., ii, p. 135 (1787).
*Erebus macrops*, Donov., Ins. China, p. 80, pl. xliv, fig. 1 (1842).
*Patula macrops*, Moore, Lep. Ceyl., iii, p. 145, pl. clxiv, fig. 5 (1885).
*Nyctipao macrops*, Hampson, Fauna Brit. Ind., Moths, ii, p. 459 (1894).

One example was received from Kiukiang and two from Ta-chien-lu.

*Distribution.* Throughout AFRICA, MADAGASCAR, INDIA, CEYLON, and BURMA (*Hampson*); CENTRAL and WESTERN CHINA.

1255. *Nyctipao albicincta.*

*Erebus albicincta*, Koll., Hüg. Kasch., iv, p. 474, pl. xxii (1848).
*Erebus rivularis*, Westw., Cab. Or. Ent., p. 57, pl. xxviii, fig. 3 (1848).

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*Nyctipao albicincta*, Hampson, Fauna Brit. Ind., Moths, ii, p. 461 (1894).

Two specimens, taken in the province of Kwei-chow in June or July, agree well with examples in my Indian series.

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM; KHÁSIS; SHILLONG; NILGIRIS? (*Hampson*); WESTERN CHINA.

### 1256. *Nyctipao pilosa*, sp. n.

Fuliginous brown suffused with purple on outer two-thirds.

Male. Primaries have a large chocolate-brown ocellus outlined in black and with some blue scales on the inner edge of the black comma-shaped pupil; ante- and postmedial bands dusky, the former only traceable towards the costa; inner half of the wing as far as the postmedial band covered with brownish pile; beyond the ocellus there is a fine, sinuous, white line, not reaching the inner margin. Secondaries covered with brownish pile except on the margins. Under surface as above in colour, the whitish line as on upper surface but broader and clearer; a submarginal series of whitish, internervular, spots.

Female. On the primaries there are longish brown hairs extending to the antemedial line and there is a medial dusky band from the ocellus to inner margin; on the secondaries the brown hairs are confined to the basal and abdominal areas, there are two dusky transverse bands and a continuation of the white sinuous line.

Expanse ♂ 94 millim. ♀ 92–106 millim.

One example of each sex from Chang-yang, three females from Chia-kou-ho, four from Ta-chien-lu, and one from Wa-shan. July.

*Habitat.* CENTRAL and WESTERN CHINA.

Allied to *N. glaucopis*, Walk.

## Genus HYLODES.

*Hulodes*, Guenée, Noct., iii, p. 207 (1852).
*Hylodes*, Hampson, Fauna Brit. Ind., Moths, ii, p. 462 (1894).

### 1257. *Hylodes caranea.*

*Phalæna caranea*, Cram., Pap. Exot., iii, pl. cclxix, figs. E.F. (1780).

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*Hulodes caranea*, Moore, Lep. Ceyl., iii, p. 155, pl. clxvi, figs. 3, 3a, and pl. clxvii, fig. 6 (1885); Leech, Trans. Ent. Soc. Lond., 1889, p. 141.
*Hylodes caranea*, Hampson, Fauna Brit. Ind., Moths, ii, p. 462 (1894).

I have specimens from Kiukiang, Wa-shan, Ta-chien-lu, and Chia-kou-ho, taken in June and July.

*Distribution.* FORMOSA; throughout INDIA, CEYLON, and BURMA; JAVA (*Hampson*); CENTRAL and WESTERN CHINA.

## Genus AGONISTA.

Rogenh.; Hampson, Fauna Brit. Ind., Moths, ii, p. 463 (1894).

### 1258. *Agonista fuscescens*, sp. n.

Male. Velvety-brown. Primaries have darker sub-basal and antemarginal bands and a pale speck in the discal cell; the secondaries also have a darker antemedial band but this is less defined than on primaries. Fringes of all the wings creamy-white. Under surface fuscous-brown; all the wings have a dark discal mark and indications of a dusky medial band; submarginal line white inwardly shaded with dark fuscous, this line is not distinct on primaries except below the costa where it is indented; marginal lines white, wavy, edged outwardly with blackish, most distinct on secondaries.

Female. Pale-brown. Primaries clouded, and on the outer area bordered, with darker; bands of the male represented in this sex by blackish lines; submarginal line sinuous, dusky with blackish points on it, limiting the marginal border; postmedial band dark brown, attenuated and indistinct about the middle. Secondaries have blackish sub-basal and antemarginal lines, a pale postmedial line inwardly bordered with dark-brown; a submarginal row of obscure blackish spots. Fringes hardly paler than the ground-colour. Under surface similar to that of the male.

Expanse ♂ 78, ♀ 84–86 millim.

One male specimen and two females from Chia-kou-ho, taken in July.

There is one female example of this species, from Darjiling, in the National Collection at South Kensington, included in the series of *A. reducens*, Walk.

*Distribution.* WESTERN CHINA; SIKHIM.



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Moore, Lep. Ceyl., iii, p. 93 (1884).

### 1259. *Panilla costipunctata*, sp. n.

Pale-brown, powdered with fuscous-brown. Primaries have blackish antemedial, medial, and postmedial lines, the first is indented below the costa, the second is wavy and slightly curved, the third is wavy and strongly curved; there are some blackish marks on the costa, a large blackish cloud on the costal area and a smaller cloud below it, both between the postmedial line and the faintly indicated pale submarginal line; reniform stigma outlined in fuscous-brown, inconspicuous; the outer margin and fringes suffused with fuscous-brown, the fringes preceded by a black line and some internervular dots. Secondaries have a black discal linear mark and postmedial line, the antemedial line is dark brown, and there is a fuscous-brown shade between them; outermarginal area fuscous-brown traversed by a pale submarginal line; fringes as on primaries. Under surface pale-brown suffused with fuscous on the primaries and on the outer area of the secondaries; all the wings have a blackish discal annulus placed on a transverse dusky shade, and a blackish irregular postmedial line.

Expanse ♂ 23–26 millim, ♀ 28 millim.

One male specimen taken by myself in Satsuma in May, one from Chia-kou-ho, a female from Moupin and another from Omei-shan; the last three were obtained in June.

*Distribution.* KIUSHIU; WESTERN CHINA.

I have described the Moupin female example as it is in better condition than either of the others.

## Genus POLYDESMA.

Boisd.; Hampson, Fauna Brit. Ind., Moths, ii, p. 465 (1894).

### 1260. *Polydesma vulgaris.*

*Polydesma vulgaris*, Butl., Trans. Ent. Soc., 1886, p. 135.

There were eight specimens in Pryer's collection, these were probably from Yokohama. I have also received the species from Kiukiang and Chang-yang. The Chinese specimens are much darker than those from Japan.

*Distribution.* JAPAN and CENTRAL CHINA.

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### 1261. *Polydesma virens.*

*Pandesma virens*, Butl., Trans. Ent. Soc. Lond., 1881, p. 192.
*Moma* (*Pandesma*) *virens*, Staud., Rom. sur Lép., vi, p. 401, pl. vii, fig. 1 (1892).
*Moma japyx*, Staud., l. c., p. 402.

There were specimens from Yesso in Pryer's collection. I have also examples from Hakodate and one from Mr. Manley of Yokohama. Butler's type was from Tokio.

Staudinger gives a very recognisable figure of *virens*, Butl. (=*japyx*, Staud.), and suggests that it may be Motschulsky's "*Habrostola*" *niveola* (Bull. Soc. Nat. Mosc., xxxix, 1, p. 195), but adds that it is not possible from the description of the latter to identify it with certainty. He goes on to remark that in my former paper (Proc. Zool. Soc. Lond., 1889, p. 480) I introduced this species (i.e. *virens*, Butl.) twice over, but I may observe that the specimen referred to by me as "*Moma*" *niveola*, Motsch., in the paper quoted, bears a label in the Doctor's writing indicating that he had identified it as his *Moma japyx*, and also as probably the "*H.*" *niveola* of Motschulsky. The specimen in question is, however, perfectly distinct from either the type of *virens*, Butl., or Staudinger's figure of the species, and I have therefore described it as *D. staudingeri.*

*Distribution.* JAPAN; YESSO; AMURLAND.

### 1262. *Polydesma staudingeri*, sp. n.

Primaries pale bluish-green traversed by a number of conspicuous black, wavy and dentate lines; a blackish-brown patch on costa towards the base, a larger brownish patch on apical area with a smaller one below it at outer angle; reniform and orbicular stigmata white, outlined in black. Secondaries pale fuscous with two transverse central lines and a broad, diffuse, submarginal band, darker. Under surface of primaries dark fuscous bordered with paler on the inner margin and marked on the costa towards apex with two whitish spots: secondaries whitish with dark brown discal mark, two transverse lines, and some clouds on outer margin.

Expanse 42 millim.

One female specimen from Gensan taken in July.

*Habitat.* COREA.

This species, which may possibly be the "*Abrostola*" *niveola* of Motschulsky, is at once separable from *D. virens*

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by the black transverse lines, the white stigmata, and the brown patches on the upper surface, quite independently of the different character of the under surface.

### 1263. *Polydesma otiosa.*

*Polydesma otiosa*, Guen., Noct., ii, p. 442 (1852); Hampson, Fauna Brit. Ind., Moths, ii, p. 468 (1894).

Two examples from the province of Kwei-chow, taken in June or July.

*Distribution.* NORTH-WEST HIMALAYAS; SYLHET; NILGIRIS (*Hampson*); WESTERN CHINA.

### 1264. *Polydesma grisea*, sp. n.

Primaries pale grey dusted with darker; sub-basal and submarginal lines black, wavy, the latter commencing on the costa in a dark grey mark; postmedial line traverses a white band of variable width, black, only well defined towards costa, where it originates in a dark grey mark, and towards the inner margin, between these points it is represented by black dots on the venation; submarginal line black, serrate, elbowed below the middle, outwardly edged with ochreous; marginal line, black, very wavy, double; reniform and orbicular stigmata dark grey, outlined in blackish, the former of large size and placed on a brownish-grey transverse band which is limited by wavy black lines. Secondaries pale grey with a brownish tinge especially on outer marginal area; medial and postmedial lines black, wavy, the former edged with white and the latter outwardly edged with ochreous followed by a diffuse blackish band; marginal line as on primaries. Fringes whitish marked with brownish grey. Under surface whity-brown: primaries have a conspicuous black discal spot preceded by a smaller one in the cell; postmedial line black, curved; outer marginal area clouded with blackish; secondaries sparingly powdered with blackish scales; a black discal mark and two wavy, black, transverse lines, the inner one rather feint; a diffuse black line from anal angle to vein 3.

Expanse 60 millim.

I have two male specimens and one female from Moupin, two males and a female from Chia-kou-ho, and one female example from the province of Kwei-chow. There are unnamed specimens of this species from Ichang, Chekiang, Shanghai, and Japan, in the National Museum at South Kensington.

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*Distribution.* EASTERN, CENTRAL, and WESTERN CHINA; JAPAN.

1265. *Polydesma inangulata.*

*Hulodes inangulata*, Guen., Noct., iii, p. 210.
*Girpa fraterna*, Moore, Lep. Ceyl., iii, p. 94, pl. clvi, figs. 5, 5a (1884).
*Polydesma inangulata*, Hampson, Fauna Brit. Ind., Moths, iii, p. 470 (1894).

Examples of the type form were obtained in the province of Kwei-chow in June or July, and a native collector captured a specimen referable to var. *fraterna*, Moore, in the island of Kiushiu.

*Distribution.* NATAL; throughout INDIA, CEYLON, and BURMA; ANDAMANS; AUSTRALIA (*Hampson*); WESTERN CHINA; KIUSHIU.

## Genus HOMOPTERA.

Boisd.; Hampson, Fauna Brit. Ind., Moths, ii, p. 474 (1894).

1266. *Homoptera* (?) *fasciata*, sp. n.

Primaries pale reddish-brown with some highly sinuous, whitish, transverse lines on the basal area and some longitudinal whitish streaks on the outer marginal area; antemedial line dark brown or blackish, curved, slightly dentate, expanding on the costa; postmedial line dark brown, sinuous, macular, outwardly limited by a pale, wavy line; the space between these lines is ashy-grey clouded and dusted with darker; marginal line formed of diamond-shaped spots which are rather darker than the ground-colour and are outlined in whitish; reniform stigma dark brown. Secondaries pale chocolate-brown with a dark brown or blackish antemedial line and a medial band, the latter has its inner edge traversed by a pale line and its outer edge limited by a whitish one; marginal line as on the primaries. Under surface pale brown, the basal and inner marginal area of secondaries whitish: all the wings have a black mark on the costa, representing a sub-basal line, an antemedial a medial and two postmedial black lines, the latter representing a band.

Expanse ♂ 36 millim, ♀ 38 millim.

One male specimen from Chang-yang and one female example from Chia-kou-ho; both were taken in August.

*Habitat.* CENTRAL and WESTERN CHINA.

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## Genus CHRYSORITHRUM.

Butl., Ann. and Mag. Nat. Hist., (5) i, p. 292 (1878).

### 1267. *Chrysorithrum amatum.*

*Catocala amata*, Brem., Fauna Nördl. China's, p. 19; Lep. Ost.-Sib., p. 60 (1864); Mén. Cat. Mus. Petr, iii, pl. xvii, fig. 4 (1863).
*Chrysorithrum fuscum*, Butl., Trans. Ent. Soc., 1881, p. 198.
*Chrysorithrum rufescens*, Butl., l. c.
*Chrysorithrum amatum*, Leech, Proc. Zool. Soc. Lond., 1889, p. 547.
*Pseudophia amata*, Staud., Rom. sur Lép., vi, p. 579 (1892).

Occurs at Yokohama, Tokio, Nikko, Fujisan, Hakodate, Gensan, Chang-yang, Kiukiang, Ni-tou, and Ta-chien-lu in June and July.

Varies in intensity of markings, and also in the colour of primaries which ranges from olive brown (var. *fuscum*) through the typical violet-grey to pale pinkish-brown (var. *rufescens*).

*Distribution.* AMURLAND; JAPAN; YESSO; COREA; CENTRAL and WESTERN CHINA.

### 1268. *Chrysorithrum maximowiczi.*

*Bolina maximowiczi*, Brem., Lep. Ost.-Sib., p. 58, pl. iv, fig. 12 (1864).
*Chrysorithrum sericeum*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 292 (1878); Ill. Typ. Lep. Het., ii, pl. xxxiv, fig. 4 (1878).
*Pseudophia* (*Chrysorithrum*) *flavomaculata*, Staud., Rom. sur Lép., vi, p. 580 (1892).

Occurs at Yokohama, Oiwake, and Fujisan; there were three specimens in Pryer's collection.

*Distribution.* AMURLAND; JAPAN.

## Genus CATEPHIA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 481 (1894).

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### 1269. *Catephia flavescens.*

*Catephia flavescens*, Butl., Ill. Typ. Lep. Het., vii, p. 74, pl. cxxxi, fig. 12 (1889); Hampson, Fauna Brit. Ind., Moths, ii, p. 482 (1894).

I have specimens from most of the localities in Western China that were visited by my collectors. June and July.

*Distribution.* DHARMSÁLA; SIKHIM (*Hampson*); WESTERN CHINA.

### 1270. *Catephia acronyctoides.*

*Anophia acronyctoides*, Guen., Noct., iii, p. 47 (1852).
*Catephia acronyctoides*, Hampson, Fauna Brit. Ind., Moths, ii, p. 482 (1894).

I have one example from Chow-pin-sa captured in May or June.

This specimen is very similar to the European *C. leucomelas*, Linn., in colour, and so far as I can see it agrees in markings with that species and also with *C. acronyctoides*, which I am inclined to think is probably a form of *C. leucomelas*.

*Distribution.* SOUTH AFRICA; SIKHIM; RANGOON (*Hampson*); WESTERN CHINA.

### 1271. *Catephia leucomelas.*

*Noctua leucomelas*, Linn., Syst. Nat., x, 518; Clerck., Icon., pl. i, fig. 2.
*Catephia ramburii*, Boisd., Ind. Méth., p. 166 (1829).

Five specimens taken by a native collector at Gensan in August.

*Distribution.* EUROPE; COREA.

## Genus ARCTE.

Koll.; Hampson, Fauna Brit. Ind., Moths, ii, p. 485 (1894).

### 1272. *Arcte cœrulea.*

*Cocytodes cœrulea*, Guen., Noct., iii, p. 41, pl. xiii, fig. 10 (1852).

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## Genus CHRYSOPERA.

Hampson, Fauna Brit. Ind., Moths, ii, p. 493 (1894).

### 1275. *Chrysopera combinans.*

*Archæa combinans*, Walker, Cat. Lep. Het., xiv, p. 1399 (1858); Moore, Lep. Ceyl., iii, p. 165, pl. clxix, fig. 3 (1885).
*Chrysopera combinans*, Hampson, Fauna Brit. Ind., Moths, ii, p. 493 (1894).

One specimen from Ta-chien-lu, taken in July.

*Distribution.* NORTH-WEST HIMALAYAS; peninsular INDIA, CEYLON, and BURMA (*Hampson*); WESTERN CHINA.

## Genus OPHIUSA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 493 (1894).

### 1276. *Ophiusa algira.*

*Noctua algira*, Linn., Syst. Nat., xii, p. 836 (1767); Esp. Schmett., iv, pl. lxxxvii, fig. 1.
*Noctua achatina*, Sulz., Abg. Ges. Ins., p. 160, pl. xxii, fig. 4 (1776).
*Noctua stuposa*, Fabr., Ent. Syst., iii, p. 42 (793).
*Noctua triangularis*, Hübn., Noct., pl. lxvi, fig. 323.
*Ophiusa algira*, Guen., Noct., iii, p. 270; Hampson, Fauna Brit. Ind., Moths, ii, p. 500 (1894).
*Grammodes algira*, var. *mandschuriana*, Staud., Rom. sur Lép., vi, p. 578 (1892).

Pryer's specimens were from Yokohama. I obtained the species at Tsuruga and my native collector at Gensan, and I have received examples from Kiukiang, Chang-yang, Chia-kou-ho, Wa-shan and Ta-chien-lu.

*Distribution.* EUROPE; AMURLAND; COREA; CENTRAL and WESTERN CHINA; JAPAN. Hampson gives also AFRICA; MAURITIUS; throughout INDIA, CEYLON, and BURMA.

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1277. *Ophiusa curvata.*

*Ophiusa algira*, var. *curvata*, Leech, Proc. Zool. Soc. Lo
1889, p. 546, pl. liii, fig. 8.

Originally described from Loochoo and Gensan. I h
since detected other specimens from Japan; these
were in Pryer's collection and were perhaps also fr
Loochoo.

*Distribution.* COREA; LOOCHOO.

1278. *Ophiusa maturata.*

*Ophiusa maturata*, Walk., Cat. Lep. Het., xiv, p. 1
(1858).

*Ophiusa falcata*, Moore, Lep. Atk., ii, p. 171, pl. vi, fig.
(1882); Leech, Proc. Zool. Soc. Lond., 1889, p. 54

*Ophiusa maturata*, Hampson, Fauna Brit. Ind., Moths
p. 499 (1894).

One example without locality in Pryer's collection.

I have specimens from Ningpo, Gensan, Kiukiang, Sh
y-shan, and Ta-chien-lu. Occurs in July.

*Distribution.* KHÁSIS; CALCUTTA; BOMBAY, NILGI
PENANG (*Hampson*); JAPAN; COREA; EASTERN, CENTR
and WESTERN CHINA.

1279. *Ophiusa arctotænia.*

*Ophiusa arctotænia*, Guen., Noct., iii, p. 272 (185
Hampson, Fauna Brit. Ind., Moths, ii, p. 501 (189

I obtained specimens in Satsuma in May and at Ge
in June. There were examples from Yokohama
Loochoo in Pryer's collection, and my native collector t
others in the island of Kiushiu. The species was
with in nearly all the localities in China that my colle
visited.

*Distribution.* Throughout INDIA, CEYLON, and BUR
JAVA (*Hampson*); JAPAN; KIUSHIU; LOOCHOO; COR
CENTRAL and WESTERN CHINA.

1280. *Ophiusa dulcis.*

*Ophiusa dulcis*, Butl., Ann. and Mag. Nat. Hist., (5) i, p.
(1878); Ill. Typ. Lep. Het., ii, pl. xxxiv, fig. 5.

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Specimens were taken by myself at Fusan in June, and by my collector at Gensan in July. Pryer's specimens were from Yokohama and Oiwake. One example was also received from Chang-yang, this has the grey portions of the wings rather darker than the Japanese and Corean specimens.

*Distribution.* JAPAN; COREA; AMURLAND; CENTRAL CHINA.

1281. *Ophiusa arcuata.*

*Ophiusa arcuata*, Moore, Proc. Zool. Soc., 1887, p. 609; Lep. Ceyl., iii, pl. clxxi, fig. 3; Hampson, Fauna Brit. Ind., Moths, ii, p. 499 (1894).

One specimen taken by myself at Gensan in July.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; ANDAMANS; JAVA (*Hampson*); COREA.

1282. *Ophiusa olista.*

*Minucia olista*, Swinhoe, Ann. and Mag. Nat. Hist., (6) xii, p. 261 (1893).

One female specimen from Kiukiang and one from Chang-yang, both taken in May.

*Habitat.* CENTRAL and WESTERN CHINA.

1283. *Ophiusa onelia.*

*Naxia onelia*, Guen., Noct., iii, p. 256 (1852).
*Caranilla onelia*, Moore, Lep. Ceyl., iii, p. 169, pl. clxx, figs. 1, 16 (1885).
*Naxia lageos*, Guen., l. c.
*Ophiusa onelia*, Hampson, Fauna Brit. Ind., Moths, ii, p. 502 (1894).

This species is represented from Shanghai in the National Museum at South Kensington.

*Distribution.* Throughout INDIA, CEYLON, BURMA; PENANG; JAVA (*Hampson*); EASTERN CHINA.

1284. *Ophiusa coreana.*

*Naxia coreana*, Leech, Proc. Zool. Soc. Lond., 1889, p. 560, pl. lii, fig. 11.

I obtained four specimens at Gensan in June and July.

*Habitat.* COREA.

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### Genus LAGOPTERA.

Guenée, Noct., iii, p. 223 (1852).

#### 1285. *Lagoptera elegans.*

*Ophiusa elegans*, Van der Hoev., Tijd. Nat. Gesch., vii, p. 280, pl. v, and figs. 6 a, b.
*Lagoptera multicolor*, Guen., Noct., iii, p. 226 (1852).
*Lagoptera elegans*. Walk., Cat. Lep. Het., xiv, p. 1352 (1858).
*Lagoptera juno*, Dalm.; Hampson, Fauna Brit. Ind., Moths, ii, p. 505.

I obtained specimens from Fushiki and Gensan in July, the examples in Pryer's collection were from Yokohama; others have been received from Kiukiang, Chang-yang, Ta-chien-lu, Omei-shan, and the province of Kwei-chow.

*Distribution.* Throughout the HIMALAYAS; NILGIRIS (*Hampson*); JAPAN; COREA; CENTRAL and WESTERN CHINA; AMURLAND.

### Genus SERRODES.

Guenée, Noct., iii, p. 251 (1852).

#### 1286. *Serrodes inara.*

*Phalæna inara*, Cram., Pap. Exot., iii, pl. ccxxxix, fig. E (1779).
*Serrodes campana*, Guen., Noct., p. 252, pl. xxi, fig. 6 ♂ (1852); Leech, Trans. Ent. Soc. Lond., 1889, p. 140.
*Serrodes inara*, Hampson, Fauna Brit. Ind., Moths, ii, p. 510 (1894).

Five specimens from Kiukiang, taken in June, and one from Omei-shan, taken in July.

*Distribution.* AFRICA; throughout INDIA, CEYLON, and BURMA; JAVA; BORNEO; AUSTRALIA (*Hampson*); CENTRAL and WESTERN CHINA.

### Genus ACANTHOLIPES.

Led.; Hampson, Fauna Brit. Ind., Moths, ii, p. 520 (1894).

#### 1287. *Acantholipes curviliea*, sp. n.

Primaries leaden-grey; ante- and postmedial lines blackish, not reaching the costa, the first is slightly oblique and the second band-

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like and incurved below the cell; submarginal line vinous-brown edged with fuscous, slightly curved, followed by three patches of black; reniform stigma lunular, orbicular punctiform, both black; fringes dark grey, paler towards the tips, preceded by a darker line with black points on it. Secondaries fuscous-grey with darker medial line, and a dark edged ochreous-brown submarginal band, the space between band and line leaden-grey; fringes grey preceded by a darker line. Under surface fuscous, all the wings have a black discal dot.

Expanse 34 millim.

One example of each sex from Chow-pin-sa and a female from Pu-tsu-fong taken in June.

*Habitat.* WESTERN CHINA.

### 1288. *Acantholipes similis.*

*Phurys similis*, Moore, Lep. Atk., p. 174, pl. vi, fig. 5 (1881).
*Phurys ochreifascia*, Hampson, Ill. Typ. Lep. Het., viii, p. 83, pl. cxlvi, fig. 2 (1891).
*Acantholipes similis*, Hampson, Fauna Brit. Ind., Moths, ii, p. 521 (1891).

Not uncommon at Moupin, Chow-pin-sa, Chia-ting-fu, Pu-tsu-fong, Kiukiang, and Ichang. Occurs in June.

*Distribution.* SIKHIM; NILGIRIS (*Hampson*); WESTERN and CENTRAL CHINA.

### 1289. *Acantholipes pansalis.*

*Dragana pansalis*, Walk., Cat. Lep. Het., xvi, p. 200 (1858).
*Acantholipes pansalis*, Hampson, Fauna Brit. Ind., Moths, ii, p. 524 (1894).

I obtained this species at Foochau in April, at Nagasaki, and in Satsuma in May.

There were specimens in Pryer's collection, and others were captured by a native at Ningpo in July.

The fresh examples are greyish-brown in colour.

*Distribution.* FORMOSA; throughout INDIA, CEYLON, and BURMA; ANDAMANS; SINGAPORE (*Hampson*); FOOCHAU, KIUSHIU; EASTERN CHINA.

## Genus FLAMMONA.

Walk., Journ. Linn. Soc. Lond., vii, p. 55.

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1290. *Flammona trilineata*, sp. n.

Primaries grey suffused with pinkish brown; antemedial, medial, and postmedial, lines, broad, dark brown, the first two almost straight, the third angled above the middle; submarginal line oblique, dusky; a blackish, linear, discal mark. Secondaries and under surface of all the wings fuscous with a pinkish tinge.

Expanse 24 millim.

One male specimen from Kiukiang. Taken in May.

*Habitat.* CENTRAL CHINA.

Genus CALOBOCHYLA.

Hübner, Verz. Schmett., p. 344.

1291. *Calobochyla salicali.*

*Pyralis salicalis*, Fabr., Syst. Ent., iii, p. 369; Hübn., Pyral., fig. 3.
*Madopa salicalis*, Steph., Cat. Brit. Ins., ii, p. 159 (1829).
*Amblygoes cinerea*, Butl., Ill. Typ. Lep. Het., iii, p. 69, pl. lviii, fig. 1 (1879).
*Calobochyla salicalis*, Hübn., Verz. Schmett., p. 344; Steph., Ill. Brit. Ent. Haust., iv, p. 18 (1834).

The specimens in Pryer's collection were from Yokohama; I obtained the species in Satsuma in May, at Hakodate in August, and at Gensan in July. I have also received examples from Chang-yang.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA; CENTRAL CHINA.

1292. *Catobochyla* (?) *bilinealis.*

*Calobochyla bilinealis*, Leech, Entom., xxii, p. 64, pl. ii, fig. 14 (1889).

One male specimen taken in the Snowy valley, near Ningpo, in July, and a female taken in August at a place three days' march north of Ichang.

*Habitat.* EASTERN and CENTRAL CHINA.

Genus HEMIPSECTRA.

Hampson, Ill. Typ. Lep. Het., viii, p. 84 (1891); Fauna Brit. Ind., Moths, ii, p. 524 (1894).

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1293. *Hemipsectra fallax.*

*Egnasia fallax*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 450.

Described from Yokohama, there was one specimen in Pryer's collection and I have others, obtained by myself, at Foochau in April, and at Nagasaki in May; one male specimen was also taken by native collector in Kiushiu, and I have received one example from Ichang.

*Distribution.* JAPAN; KIUSHIU; COREA; CENTRAL CHINA.

Genus EUCLIDIA.

Ochs.; Stephens, Ill. Brit. Ent. Haust., iii, p. 138 (1829).

1294. *Euclidia glyphica.*

*Noctua glyphica*, Linn., Syst. Nat., x, p. 510; Hübn., Noct., fig. 347.

*Euclidia consors*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 293 (1878); Ill. Typ. Lep. Het., ii, p. 42, pl. xxxiv, fig. 6 (1878).

*Euclidia glyphica*, Leech, Proc. Zool. Soc. Lond., 1889, p. 554.

*Euclidia glyphica*, var. *dentata*, Staud., Rom. sur Lép., vi, p. 573 (1878).

Specimens from Yokohama, Oiwake, and Yesso were in Pryer's collection. Some of the examples from Japan are much larger than those in my collection from Europe.

Var. *dentata*, from Amurland is a large pale form.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO.

1295. *Euclidia munita.*

*Euclidia munita*, Hb. ab. *immunita*, Mill.; Alph., Rom. sur Lép., vi, p. 45 (1897).

Recorded from the province of Gan-sou.

*Distribution.* SOUTHERN RUSSIA; NORTH CHINA.

Genus LEUCANITIS.

Guenée, Noct., iii, p. 58 (1852).

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1296. *Leucanitus chinensis.*

*Leucanitis chinensis*, Alph., Rom. sur Lép., vi, p. 45 (1897).

Recorded from the province of Gan-sou.
*Habitat.* NORTH CHINA.

1297. *Leucanitis flexuosa.*

*Leucanitis flexuosa*, Mén.; Rom. sur Lép., vi, p. 47 (1897).

Recorded from the province of Chan-si.
*Distribution.* SOUTH-EAST RUSSIA; ASIA MINOR; NORTH CHINA.

Genus REMIGIA.

Hampson, Fauna Brit. Ind., Moths, ii, p. 525 (1894).

1298. *Remigia archesia.*

*Noctua archesia*, Cram. Pap., Exot. iii, p. 145, pl. cclxxiii, figs. F, G (1780).
*Remigia archesia*, Leech, Proc. Zool. Soc. Lond., 1889, p. 552; Hampson, Fauna Brit. Ind., Moths, ii, p. 526 (1894).

I obtained this species at Foochau in April, and Mr. Smith took it at Hakone in August; my native collector secured specimens at Ningpo in June and at Gensan in July. Pryer's examples were from Yokohama.

I have also received specimens from Kiukiang, Ship-y-shan, Omei-shan, and Chia-kou-ho.

An exceedingly variable species.

*Distribution.* ETHIOPIAN and ORIENTAL REGIONS (*Hampson*); JAPAN; EASTERN, CENTRAL, and WESTERN CHINA; COREA.

1299. *Remigia annetta.*

*Remigia annetta*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 293 (1878); Ill. Typ. Lep. Het., ii, p. 43, pl. xxxiv, fig. 7 (1878).
*Euclidia annetta*, Staud., Rom. sur Lép., vi, p. 574 (1892).

Pryer's specimens were from Yokohama. I obtained some examples at Ningpo in April, in Satsuma, and at Nagasaki in May, and at Tsuruga, Fushiki and Gensan in July. The species was met with by my collectors in China in most of the localities that they explored.

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It is perhaps rather surprising that this variable species should have escaped thus far with only one name.

*Distribution.* JAPAN; YESSO; KIUSHIU; COREA; EASTERN, CENTRAL, and WESTERN, CHINA; AMURLAND.

### 1300. *Remigia inferna*, sp. n.

Female. Primaries brownish-grey with a violet tinge; antemedial line oblique, blackish, outwardly edged with dark brown, preceded by a black dot above the inner margin; postmedial line blackish highly irregular, resembling the profile of a human face; reniform stigma blackish not clearly defined, a black spot above it on the costa; orbicular, lunular, brown with darker outline; submarginal band blackish, its outer edge serrate and with a cinereous suffusion beyond it; marginal band brownish with a series of dark annular marks on it. Secondaries fuscous-brown with an obscure blackish central line and indications of a blackish postmedial line; fringes of all the wings preceded by a fine black line. Under surface brown suffused with fuscous; all the wings are traversed by two diffuse fuscous lines.

Expanse 46 millim.

One female specimen from Wa-shan, one from Chow-pin-sa, one from Pu-tsu-fong, and a rather worn male from Huang-mu-chang. July.

*Habitat.* WESTERN CHINA.

Allied to *R. annetta*, Butl., but may be distinguished from that species by the markings of primaries and its superficial resemblance to *Euclidia mi*, Clerck., as regards the character of the postmedial line.

### 1301. *Remigia nigrisigna.*

*Remigia nigrisigna*, Leech, Proc. Zool. Soc. Lond., 1889, p. 553, pl. lii, fig. 5.

Described from a male specimen taken in May in Satsuma, a female was subsequently obtained by a native collector in the island of Kiushiu.

The female example is rather smaller than the male, the patch following the reniform stigma is hardly darker than the ground-colour, and the antemedial line is less oblique.

*Distribution.* FORMOSA (*Coll. Moore*); KIUSHIU.



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### 1302. *Remigia laxa.*

*Phurys laxa*, Walk., Cat. Lep. Het., xiv, p. 1486 (1858).
*Drasteria pavona*, Feld., Reis. Nov. Lep., pl. cxvii, fig. 9 (1874).
*Remigia laxa*, Hampson, Fauna Brit. Ind., Moths, ii, p. 525 (1894).

Two male specimens and one female from Moupin, one male example from Chang-yang, and one female from Ichang. June and July.

*Distribution.* SIKHIM (*Hampson*); CENTRAL and WESTERN CHINA.

### 1303. *Remigia propugnata*, sp. n.

Primaries brownish-grey tinged with violet; ante- and postmedial bands, which are united above the inner margin, are blackish, the antemedial is outwardly oblique and has an inward spur in the direction of a dot above the inner margin, the postmedial is inwardly oblique and is angulated on both edges; connected with the postmedial band below the cell there is a paler spot outlined in dark brown with an oblique dark brown line from it to the costa, the band does not extend to the costa but its truncate termination touches an almost quadrate dark brown spot at the costal extremity of the black submarginal line which latter is outwardly edged with brownish; outer margin suffused with fuscous and limited by a violet-grey diffuse line; reniform stigma not well defined, its inner edge blackish; orbicular punctiform, black; fringes chequered with fuscous and preceded by a wavy black line. Secondaries brownish suffused with fuscous; central line obscure, blackish; fringes greyish preceded by a wavy brown line. Under surface of primaries fuscous, costal margin and outer marginal area golden-brown: secondaries golden-brown irrorated with fuscous, discal spot and postmedial line blackish; there are indications of a dusky submarginal band.

Expanse 46 millim.

One male specimen from Pu-tsu-fong and one from the province of Kwei-chow, taken in June or July.

*Habitat.* WESTERN CHINA.

### 1304. *Remigia* (?) *conspicua*, sp. n.

Primaries greyish-brown with a pinkish tinge; a broad darker brown, oblique, band traverses the median area, the interior of this band is of the ground-colour towards the inner margin; submarginal line indistinct, wavy, preceded on the costa by a small dark brown

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patch. Fringes of the ground-colour chequered with darker. Secondaries ochreous suffused with fuscous on the discal area. Under surface stramineous becoming golden-yellow on outer margins and clouded with fuscous on the median area of the primaries.

Expanse 40 millim.

One male specimen taken by my native collector at Hakodate in June or July.

*Habitat.* YESSO.

I have placed this specimen in *Remigia* provisionally; a new genus will probably have to be founded for its reception.

### Genus TRIGONODES.

Guenée, Noct., iii, p. 281 (1852).

#### 1305. *Trigonodes hyppasia.*

*Noctua hyppasia*, Cram., Pap. Exot., iii, pl. ccl, fig. E (1779).

*Trigonodes hyppasia*, Hampson, Fauna Brit. Ind., Moths, ii, p. 527 (1894).

Seven specimens from Loochoo in Pryer's collection. I have also received examples from Chia-ting-fu (July), Ichang (August), and Ship-y-shan (September).

*Distribution.* AFRICA; MAURITIUS; MADAGASCAR; ADEN; FORMOSA; throughout INDIA, CEYLON, and BURMA; JAVA; AUSTRALASIA (*Hampson*); CENTRAL and WESTERN CHINA; LOOCHOO.

### Genus GRAMMODES.

Guenée, Noct., iii, p. 275 (1852).

#### 1306. *Grammodes geometrica.*

*Grammodes ammonia*, Guen., Noct., iii, p. 278 (1852).

*Noctua geometrica*, Fabr., Syst. Ent., p. 599 (1775); God. Lép. Fr., v, p. 114, pl. liii, fig. 4.

*Noctua ammonia*, Cram., Pap. Exot., iii, pl. ccl, fig. D (1779).

*Grammodes geometrica*, Hampson, Fauna Brit. Ind., Moths, ii, p. 531 (1894).

An extensive series was reared from larvæ at Chung-king, in May. I have also received specimens from

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August.

Varies considerably in the width of the central pale fascia of primaries, this in a few examples is brown.

*Distribution.* EUROPE.—AFRICA; FORMOSA; throughout INDIA and CEYLON; JAVA; AUSTRALIA (*Hampson*); WESTERN CHINA.

1307. *Grammodes mygdon.*

*Noctua mygdon*, Cram., Pap. Exot., ii, pl. clvi, fig. G (1777).
*Chalciope mygdonias*, Hübn., Verz. Schmett., p. 268 (1816).
*Grammodes mygdon*, Hampson, Fauna Brit. Ind., Moths, ii, p. 531 (1894).

There were seven specimens from Loochoo in Pryer's collection, and I have one example from Kiukiang which was taken in May.

*Distribution.* FORMOSA; throughout INDIA, CEYLON, and BURMA; JAVA; BORNEO (*Hampson*); CENTRAL CHINA; LOOCHOO.

Genus ENTOGRAMMA.

Guenée, Noct., iii, p. 203 (1852).

1308. *Entogramma fautrix.*

*Entogramma fautrix*, Guen., Noct., iii, p. 204 (1852); Hampson, Fauna Brit. Ind., Moths, ii, p. 532 (1894).

I took two specimens at Foochau in April.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; ANDAMANS; JAVA (*Hampson*); FOOCHAU.

Genus CÆNURGIA.

Walk., Cat. Lep. Het., xiv, p. 1491 (1858).

1309. *Cænurgia electaria.*

*Doryodes electaria*, Brem., Lep. Ost.-Sib., p. 84, pl. vii, fig. 12 (1864).
*Pelamia electaria*, Staud., Cat. Lep. Eur., p. 135 (1871); Rom. sur Lép., vi, p. 575 (1892).

There were specimens from Oiwake in Pryer's collection. I obtained the species at Gensan in July and at Hakodate

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in August, and have received one example from Mr. Manley of Yokohama.

There is no doubt whatever about the identification of this species. Dr. Staudinger states that he has received a somewhat similar species from Japan, but does not give it a name.

*Distribution.* AMURLAND; JAPAN; YESSO; COREA.

## Genus THERMESIA.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 533 (1894).

### 1310. *Thermesia rubricans.*

*Ophiusa rubricans*, Boisd., Faun. Lép. Mad., p. 106, pl. xvi, fig. 1 (1834).
*Thermesia rubricans*, Guen., Noct., iii, p. 356 (1852); Hampson, Fauna Brit. Ind., Moths, p. 534 (1894).
*Azazia rubricans*, Walk., Cat. Lep. Het., xv, p. 1576 (1858).

One example received from Mr. Manley of Yokohama.

*Distribution.* AFRICA; throughout the INDIAN REGION; JAVA; and PACIFIC ISLANDS (*Hampson*); JAPAN.

### 1311. *Thermesia ussuriensis.*

*Remigia ussuriensis*, Brem., Lep. Ost.-Sib., p. 61, pl. v, fig. 19 (1864).
*Azazia unduligera*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 293 (1878); Ill. Typ. Lep. Het., ii, p. 43, pl. xxxiv, fig. 8 (1878).
*Celiptera ussuriensis*, Alph., Rom. sur Lép., ix, p. 178 (1897).

Occurs at Nagasaki in June; at Shimonoseki; Fushiki, and Tsuruga in July, and at Hakodate in August. There were specimens from Yokohama in Pryer's collection, the species has been recorded from Tokio, and I have one example from Chang-yang which was taken in June. My collectors in Western China obtained the species at Moupin, Ta-chien-lu, and in the province of Kwei-chow, in July.

*Distribution.* AMURLAND; JAPAN; YESSO; KIUSHIU; CENTRAL and WESTERN CHINA; COREA.

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### 1312. *Thermesia orientalis*, sp. n.

Pale brown suffused with fuscous-brown, outer marginal area darker inwardly limited by a whitish edged dark brown line. Primaries have indications of two blackish transverse lines; the outer one marked with black points on the veins; reniform stigma represented by a white dot surrounded with blackish; orbicular stigma blackish, punctiform; all the wings have a pale, wavy, submarginal line but this is indistinct. Fringes preceded by a dark wavy line dotted with whitish. Under surface pale brown suffused with fuscous-brown especially on the outer areas; primaries have a white discal dot ringed with fuscous, preceded by a blackish one; two blackish transverse lines beyond the middle of the wing, the first of these is wavy, and the second is oblique interrupted and inwardly edged with whitish: secondaries have a white discal dot, two wavy fuscous transverse lines, and a curved series of fuscous ringed white dots.

Expanse 44 millim.

One male specimen and two females from the province of Kwei-chow. June and July.

*Habitat.* WESTERN CHINA.

### 1313. *Thermesia mandarina*, sp. n.

Dusky ochreous-brown. Primaries have an obscure antemedial line, and an oblique postmedial line, the latter, which does not attain the costa, is outwardly edged with ochreous; the oblique line as well as two obscure wavy lines beyond are continued on the secondaries. Under surface ochreous irrorated with fuscous; primaries suffused with blackish above the inner margin; all the wings have a blackish discal dot and two transverse lines, the outer one on primaries diffuse, that on secondaries obscure.

Expanse 50 millim.

One female from Omei-shan, taken in June or July.

*Habitat.* WESTERN CHINA.

### 1314. *Thermesia* (?) *butleri*, sp. n.

Pinkish grey-brown, olive-brown clouded with blackish-grey on outer marginal area, the basal area clothed with olive-brown hair. Primaries have a dusky curved and wavy antemedial line, an irregular dusky central shade, and a reddish-brown, oblique line, tinged inwardly with white, this line extends from the apex to the inner margin where it terminates one-third from the angle; the

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postmedial line is blackish, angulated, and extends from the costa to the oblique line opposite the cell; reniform stigma represented in the male by a blackish ringed white dot, but in the female the stigma is of the ordinary shape and is outlined in blackish; orbicular stigma blackish, punctiform. Secondaries have a white edged reddish-brown oblique line which appears to be a continuation of that on the primaries. Under surface yellowish; all the wings have a blackish discal dot and two transverse lines, the first wavy and the second diffuse. Palpi have the third and part of the second joints yellow, the remainder being velvety black.

Expanse 54–60 millim.

One male specimen from Chow-pin-sa, one female from Omei-shan, and one example of the same sex from the province of Kwei-chow. June.

*Hab.* WESTERN CHINA.

### 1315. *Thermesia* (?) *brunnea*, sp. n.

Primaries pale cinnamon-brown; basal area tinged with fuscous, limited by a darker irregular line; a fuscous median fascia, its inner edge not clearly defined, its outer edge limited by a serrate black line; three black equidistant dots in the cell; submarginal line dusky, only distinct towards the costa; a series of black dots on the outer margin. Secondaries colour of primaries with an irregular postmedial series of black dots and an antemedial dusky line, the latter is not clearly defined, and the space between it and the black dots is sparingly powdered with fuscous scales; a series of black dots on the outer margin. Under surface pale brown powdered with darker.

Expanse 30–32 millim.

Two examples of each sex from Oiwake in Pryer's collection.

*Habitat.* JAPAN.

## Genus ISCHYJA.

Hübn.; Hampson, Fauna Brit. Ind., Moths, ii, p. 537 (1894).

### 1316. *Ischyja manlia.*

*Noctua manlia*, Cram., Pap. Exot., 1, pl. xcii, fig. A.
*Ischyja manlia*, Hübn., Verz. Schmett., p. 265 (1816); Moore, Lep. Ceyl., iii, p. 138, pl. clxiii, figs. 1, 1 a, 1 b, (1885); Hampson, Fauna Brit. Ind., Moths, ii, p. 537 (1894).

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*Potamophora manlia*, Guen., Noct., iii, p. 123 (1852).

This species occurs in June and July; it was obtained by my collectors at Kiukiang and in most of the localities in Western China that they visited.

*Distribution.* PHILIPPINES; throughout INDIA, CEYLON, and BURMA; JAVA; ANDAMANS (*Hampson*); CENTRAL and WESTERN CHINA.

### Genus PLATYJA.

Hübn., Verz. bek. Schmett., p. 268 (1818).

#### 1317. *Platyja umminea.*

*Noctua umminea*, Cram., Pap. Exot., iii, pl. cclxvii, fig. F (1780).
*Sympis subunita*, Guen., Noct., iii, p. 344 (1852).
*Ophisma umminia*, Walk., Cat. Lep. Het., xiv, p. 1384 (1858).
*Cotuza drepanoides*, Walk., Cat. Lep. Het., xv, p. 1552 (1858).
*Ginœa removens*, Walk., Cat. Lep. Het., xv, p. 1638 (1858).
*Hulodes falcata*, Feld., Reis. Novara Lep., pl. cxv, fig. 8 (1874).
*Platyja umminea*, Hampson, Fauna Brit. Ind., Moths, ii, p. 539 (1894).

*Distribution.* CHINA; throughout INDIA, CEYLON, and BURMA; PENANG; SUMATRA; JAVA; BORNEO; CAPE YORK (*Hampson*).

### Genus CRITHOTE.

Walker, Journ. Linn. Soc. Lond., vii, p. 182 (1864).

#### 1318. *Crithote* (?) *prominens*, sp. n.

Primaries pinkish-grey; median third, except towards costa, dark chocolate-brown the inner edge oblique and the outer diffuse and irregular, a small suffused patch of the ground-colour is enclosed on inner margin; apical area suffused with fuscous-brown, limited inwardly by a darker oblique line; the only transverse line is the postmedial and this is only clearly defined on the costal area. Secondaries fuscous-grey. Under surface fuliginous.

Expanse 34 millim.

One male specimen taken in July at Chang-yang.

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*Habitat.* CENTRAL CHINA.

This species is referred provisionally to *Crithote* as its chief generic characters seem to indicate its being placed there; it differs, however, in the following particulars from Hampson's diagnoses of *Crithote.* The inner margin of primaries is slightly lobed about one-fourth from the base, this has long blackish fringes; the outer margin of the secondaries is rounded; the mid tibiæ are only moderately hairy.

### Genus HARMATELIA.

Moore, Lep. Atk., p. 182 (1882).

#### 1319. *Harmatelia bifidalis.*

*Harmatelia bifidalis,* Leech, Entom., xxii, p. 64, pl. ii, fig. 11 (1889).

Two specimens taken by myself at Hakodate in August.

### Genus EPISPARIS.

Walk.; Hampson, Fauna Brit. Ind., Moths, ii, p. 543 (1894).

#### 1320. *Episparis varialis.*

*Neviasca varialis,* Walk., Cat. Lep. Het., xvi, p. 7 (1858).
*Episparis varialis,* Moore, Lep. Ceyl., iii, p. 217, pl. clxxv, fig. 12 (1885); Hampson, Fauna Brit. Ind., Moths, ii, p. 543 (1894).

One example of each sex taken in June at Ichang.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; ANDAMANS; JAVA; BORNEO (*Hampson*); CENTRAL CHINA.

### Genus OXYODES.

Guenée, Noct., iii, p. 128 (1852).

#### 1321. *Oxyodes scrobiculata.*

*Noctua scrobiculata,* Fabr., Sp. Ins., ii, p. 212 (1781).
*Phalæna clytia,* Cram., Pap. Exot., iv, pl. cccxcix, fig. G (1782).
*Oxyodes scrobiculata,* Moore, Lep. Ceyl., iii, p. 141, pl. clxiv, fig. 1 (1885); Hampson, Fauna Brit. Ind., Moths, ii, p. 546 (1894).

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Recorded from China but probably from some southern locality. The species was not obtained by my collectors.

*Distribution.* CHINA; throughout INDIA, CEYLON, and BURMA; JAVA; FIJI (*Hampson*).

## Genus SPIRAMA.

Guen.; Hampson, Fauna Brit. Ind., Moths, ii, p. 552.

### 1322. *Spirama retorta.*

*Phalæna retorta*, Clerck., Icon., pl. lxiv, figs. 2, 3 (1759); Cram., Pap. Exot., ii, pl. cxvi, fig. D (1777), and iii, pl. cclxxiv, fig. A (1780).
*Noctua spiralis*, Fabr., Sp. Ins., ii, p. 211 (1781).
*Erebus retorta*, Koll., Hüg. Kasch., iv, p. 475 (1848).
*Erebus chemista*, Koll., l. c.
*Spirama suffumosa*, Guen., Noct., iii, p. 195 (1852).
*Spirama japonica*, Guen., l. c.
*Spirama simplicior*, Butl., Trans. Ent. Soc. Lond., 1881, p. 198.
*Spirama inæqualis*, Butl., Ann. and Mag. Nat. Hist., (5) xi, p. 116 (1883).
*Spirama jinchuena*, Butl., l. c., p. 115.
*Spirama retorta*, Leech, Proc. Zool. Soc. Lond., 1889, p. 545; Hampson, Fauna Brit. Ind., Moths, ii, p. 553 (1894).

Common in Japan, Corea, and China; there appears to be a succession of broods.

All the forms described by Butler and Guenée as distinct species are represented in my series, selected from a large number of specimens, and these are so well linked together by intergrades that I have no hesitation in regarding them as simply modifications of one exceedingly variable species.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; ANDAMANS; JAVA (*Hampson*); JAPAN; CHINA; COREA.

### 1323. *Spirama martha.*

*Hypopyra martha*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 292 (1878); Ill. Typ. Lep. Het., ii, p. 41, pl. xxxiv, fig. 3 (1878).
*Spirama ægrota*, Butl., Trans. Ent. Soc. Lond., 1881, p. 197.

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The specimens in Pryer's collection were from Yokohama. I obtained the species at Nagasaki and have received examples from Kiukiang, which were taken in May and June. It has also been recorded from Tokio and Nikko, and I have examples from Sultanpore, Kulu, where they were taken by Captain Young.

*Distribution.* JAPAN; KIUSHIU; CENTRAL CHINA; NORTH-WEST HIMALAYAS.

### 1324. *Spirama vespertilio.*

*Noctua vespertilio*, Fabr., Mant. Ins., ii, p. 136 (1787).
*Hypopyra vespertilio*, Guen., Noct., iii, p. 199 (1852).
*Hypopyra extricans*, Walk., Cat. Lep. Het., xiv, p. 1328 (1857); Butl., Ill. Typ. Lep. Het., iii, p. 27, pl. xlvii, fig. 12 (1879).
*Hypopyra dulcina*, Feld., Reise. Nov. Lep., iv, pl. cxv, fig. 10 (1874).
*Spirama vespertilio*, Hampson, Fauna Brit. Ind., Moths, ii, p. 554 (1894).

Pryer's specimens were from Yokohama. It also occurs at Shimonoseki, Nagahama, Tsuruga, and in the province of Satsuma in July. My collectors obtained examples in most of the localities in Western China that they visited.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; ANDAMANS; BORNEO (*Hampson*); JAPAN; KIUSHIU; WESTERN CHINA.

### 1325. *Spirama rectifasciata.*

*Spirama rectifasciata*, Mén., Cat. Mus. Petr., pl. xvii, fig. 6 (1863).
*Spirama interlineata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 291 (1878); Ill. Typ. Lep. Het., ii, p. 41, pl. xxxiv, fig. 2 (1878).
*Calliodes rectifasciata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 545.

I obtained specimens at Nagasaki and Shimonoseki in June, and at Tsuruga and Gensan in July. My collectors in China met with the species at Kiukiang in July.

There were some examples in Pryer's collection, but these were not localised.

*Distribution.* JAPAN; KIUSHIU; COREA; CENTRAL CHINA.

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## Genus PHYLLODES.

Boisduval, Voy. Astrolable, Lép., p. 246 (1832).

### 1326. *Phyllodes punctifascia*, sp. n.

Primaries brown irrorated with blackish in and around the cell; there are five angled transverse lines but the postmedial and submarginal only are distinct, these are olive-brown and are angled at the point where they cross an oblique line of the same colour which extends from the apex to two silvery white marks in the cell; the upper mark is divided into two parts in the male specimen, but is entire in the female and y-shaped. Secondaries blackish becoming brown on the outer margin and clothed with long brown hairs on the basal area; a postmedial series of six large light fulvous spots. Under surface greyish-brown; primaries have a dusky postmedial band and streak from the apex to the cell; secondaries also have a postmedial band, an antemedial line only distinct on the costa, and some blackish dots between the nervules on outer area.

Expanse 114–117 millim.

One example of each sex from Omei-shan, and one female specimen from Chia-kou-ho. July.

*Habitat.* WESTERN CHINA.

This species, like *Miniodes ornata*, represents a dead leaf in shape and marking of the primaries.

### 1327. *Phyllodes dentilinea*, sp. n.

Primaries greyish-brown suffused with darker and heavily reticulated with black on costal part of basal area, there is also a large black reticulated patch on the costal area between the two silvery white cell spots and the angulated black postmedial line; submarginal line black, wavy, excurved opposite the cell where it is met by a black streak from the apex which is less produced than in *P. punctifascia*; there are other lines between the basal reticulations and the postmedial, but these are obscurely defined. Secondaries bluish-black streaked with brown on the outer margin and clothed with greyish-brown hairs on basal area; postmedial line fulvous, strongly dentate. Under surface fuscous grey; primaries fuliginous on discal area; discal mark whitish.

Expanse ♂ 105 millim, ♀ 118 millim.

Three male specimens and one female from the province of Kwei-chow, and two males from Chang-yang.

*Habitat.* CENTRAL and WESTERN CHINA.

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## Genus OPHIDERES.

Boisd.; Hampson, Fauna Brit. Ind., Moths, ii, p. 558 (1894).

### 1328. *Ophideres fullonica.*

*Noctua fullonica*, Linn., Syst. Nat., xii, p. 812 (1767); Clerck., Icon., pl. xlviii, figs. 1—4 (1759).
*Phalæna pomona*, Cram., Pap. Exot., i, pl. lxxvii, fig. C (1776).
*Ophideres fullonica*, Leech, Proc. Zool. Soc. Lond., 1889, p. 544; Hampson, Fauna Brit. Ind., Moths, ii, p. 560 (1894).

I have examples of the male from Gensan, Omei-shan, and Kiukiang, and of the female from Gensan and the province of Kwei-chow. Staudinger states (Rom. sur Lép., vi, p. 582) that Oberthür in recording this species from the isle of Askold has probably confused it with *O. tyrannus*, which seems very unlikely. As *O. fullonica* occurs in Northern Corea it may be expected to occur in Amurland.

*Distribution.* AFRICA; throughout the ORIENTAL REGION to NEW GUINEA and AUSTRALIA (*Hampson*); COREA; CENTRAL and WESTERN CHINA.

### 1329. *Ophideres tyrannus.*

*Ophideres tyrannus*, Guen., Noct., iii, p. 110 (1852); Hampson, Fauna Brit. Ind., Moths, ii, p. 562 (1894).
*Adris tyrannus*, Moore, Trans. Zool. Soc., 1881, p. 69, pl. xiii, fig. 5.

Pryer's specimens were from Oiwake. I have received the species from Hakodate and also from Chang-yang, Kiukiang, Ship-y-shan, Omei-shan, Moupin, Ta-chien-lu, and Chia-kou-ho.

The primaries vary considerably in tint, and in the amount of green markings, and some specimens seem to agree with the form described by Staudinger as var. *amurensis*, in which the primaries are unicolorous brown, darker than is usual in typical examples. There are all intergrades occurring in China between this form and the type.

*Distribution.* HIMALAYAS; CALCUTTA (*Hampson*); AMURLAND; JAPAN; YESSO; CENTRAL and WESTERN CHINA.

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*Noctua salaminia*, Fabr., Ent. Syst., iii, 2, p. 17 (1794); Cram., Pap. Exot., ii, pl. clxxiv, fig. A (1777).
*Mænas salaminia*, Moore, Lep. Ceyl., iii, p. 134, pl. clxi, figs. 1, 1[a], 1[b] (1885).
*Ophideres salaminia*, Leech, Trans. Ent. Soc. Lond., 1889, p. 137; Hampson, Fauna Brit. Ind., Moths, ii, p. 559 (1894)

One specimen received from Kiukiang.

*Distribution.* MADAGASCAR; FORMOSA; throughout the ORIENTAL REGION to AUSTRALIA and FIJI (*Hampson*); CENTRAL CHINA.

## Genus CALPE.

Treit.; Hampson, Fauna Brit. Ind., Moths, ii, p. 563 (1894).

### 1331. *Calpe capucina.*

*Bombyx capucina*, Esp., Schmett., iii, pl. lxxxi, figs. 1—3 (1789).
*Bombyx thalictri*, Ochs., Schmett., iv, p. 78.
*Calpe sodalis*, Butl., Ann. and Mag. Nat. Hist., (5), i, p. 203 (1878); Ill. Typ. Lep. Het., ii, pl. xxxii, fig. 2 (1878).
*Calpe capucina*, Leech, Proc. Zool. Soc. Lond., 1889, p. 529.

Occurs at Gensan in June and July; at Nagahama in July, and at Hakodate in August. Pryer's specimens were from Yokohama and Oiwake, and I received one example from Chang-yang where it was captured in July.

Japanese and Corean specimens agree with European examples.

*Distribution.* EUROPE; AMURLAND; JAPAN; YESSO; COREA; CENTRAL CHINA.

### 1332. *Calpe emarginata.*

*Noctua emarginata*, Fabr., Ent. Syst., iii, 2, p. 240.
*Oræsia alliciens*, Walk., Cat. Lep. Het., xii, p. 945 (1875).
*Oræsia tentans*, Walk., l. c.
*Oræsia emarginata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 529.
*Calpe emarginata*, Hampson, Fauna Brit. Ind., Moths, ii, p. 564 (1894).

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My native collector found this species common at Gensan in August; the specimens in Pryer's collection were from Nikko.

The forms *alliciens* and *tentans* are each represented in the series, and others connect these forms with typical *emarginata.*

*Distribution.* CHINA; throughout INDIA, CEYLON, and BURMA (*Hampson*); JAPAN; COREA.

### 1333. *Calpe lata.*

*Calpe lata,* Butl., Trans. Ent. Soc., Lond., 1881, p. 21.

Described from Tokio. I took one specimen at Gensan in July and another at Fushiki in the same month.

*Distribution.* JAPAN; COREA.

### 1334. *Calpe striata.*

*Calpe striata,* Pouj., Ann. Soc. Ent., France, 1887, p. cxxxix.

Two male specimens from Omei-shan and one from Pryer's collection, previously referred to by me as a form of *C. lata;* three females from Chia-kou-ho and two from Ta-chien-lu. Occurs in June and July.

*Distribution.* WESTERN CHINA; JAPAN.

### 1335. *Calpe excavata.*

*Calpe excavata,* Butl., Ann. and Mag. Nat. Hist., (5) i, p. 202 (1878); Ill. Typ. Lep. Het., xxxii, fig. i. (1878).

A series from Yokohama and Oiwake in Pryer's collection, I obtained one example at Gensan in July, and have received specimens from Chang-yang, Kiukiang, and the Province of Kwei-chow.

The type was from Tokio and the species has been recorded from Chekiang.

Pryer states that the larva "spins a cocoon interwoven with strips of fibre on the stems of trees."

*Distribution.* JAPAN; EASTERN, CENTRAL, and WESTERN CHINA; COREA.

### 1336. *Calpe bicolor.*

*Calpe bicolor,* Moore, Proc. Zool. Soc. Lond., 1883, p. 19; Waterhouse, Aid., ii, pl. cxxx, fig. 4; Hampson, Fauna Brit. Ind., Moths, ii, p. 564 (1894).

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One example from Omei-shan taken in June or July.
*Distribution.* KÁNGRA (*Hampson*); WESTERN CHINA.

### Genus PLUSIA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 567 (1894).

#### 1337. *Plusia signata.*

*Noctua signata*, Fabr., Ent. Syst., iii, 2, p. 81 (1794).
*Plusia signata*, Guen., Noct., ii, p. 345 (1852); Hampson, Fauna Brit. Ind., Moths, ii, p. 568 (1894).

The specimens in Pryer's collection were from Yokohama and Loochoo. I have also received an example from Ship-y-shan.

Perhaps a form of the European *P. chalcitis.*

*Distribution.* WEST AFRICA; CEYLON; JAVA; FIJI (*Hampson*); CENTRAL CHINA; JAPAN; LOOCHOO.

#### 1338. *Plusia verticillata.*

*Plusia verticillata*, Guen., Noct., ii, p. 344 (1852); Walk., Cat. Lep. Het., xii, p. 923 (1857); Moore, Lep. Ceyl., iii, p. 70, pl. clii, fig. 6 (1884).
*Plusia eriosoma*, Doubl.; Hampson, Fauna Brit. Ind., Moths, ii, p. 569 (1894).

Occurs in Satsuma in May and at Fushiki and Gensan in July. Pryer's specimens were from Yokohama, and I have received the species from Ship-y-shan and Ni-tou.

*Distribution.* NORTH and SOUTH AMERICA; WADELAI; ADEN; throughout the INDIAN, MALAYAN, and AUSTRALASIAN REGIONS (*Hampson*); JAPAN; COREA; CENTRAL and WESTERN CHINA.

#### 1339. *Plusia gutta.*

*Noctua circumflexa*, Esp., Schmett., iv, pl. iii, figs. 5, 6; Hübn., Noct., fig. 285 (*nec* Linn.).
*Plusia gutta*, Guen., Noct., ii, p. 346; Leech, Proc. Zool. Soc. Lond., 1889, p. 532.
*Plusia albostriata*, Leech, Proc. Zool. Soc. Lond., 1889, p. 532.

I obtained specimens at Gensan in July, and at Hakodate in August; those in Pryer's collection were from

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Yokohama and Yesso. The species was also found at Oiwake, Ningpo, Kiukiang, Chang-yang, and Ta-chien-lu. Occurs in May, July, and August.

A form of this species occurring in Eastern Asia, sometimes confused with *albostriata*, Brem., has the silvery markings heavier and a silver linear mark at the end of the cell.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA.

### 1340. *Plusia nigrisigna.*

*Plusia nigrisigna*, Walk., Cat. Lep. Het., xii, p. 928 (1857); Butl., Ill. Typ. Lep. Het., vi, p. 36, pl. cx, fig. 4 (1886); Alph., Rom. sur Lép., vi, p. 43 (1892); Hampson, Fauna Brit. Ind., Moths, ii, p. 570 (1894).

Pryer had six specimens from Yokohama in his collection, under the name *P. gamma*, which are referable to this species. I have received examples from Moupin, Choupin-sa, and Chia-kou-ho; Alphéraky records one from Chouï-Tchin-Pou, in the province of Sétchouén.

Staudinger (Rom. sur Lép., vi, p. 549) records a specimen of *P. gamma* from Amurland. I have not seen an example of this latter species from any part of Eastern Asia where it seems to be replaced by *P. nigrisigna*.

*Distribution.* NORTH-WEST PROVINCES; the HIMALAYAS from SIMLA to SIKHIM (*Hampson*); JAPAN; WESTERN CHINA.

### 1341. *Plusia typinota.*

*Plusia typinota*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 201 (1878); Ill. Typ. Lep. Het., ii, p. 34, pl. xxxi, fig. 10 (1878).

The type is in poor condition, but appears to be referable to *P. nigrisigna*, Linn.; it was taken by Mr. Jonas at Yokohama.

*Habitat.* JAPAN.

### 1342. *Plusia rutilifrons.*

*Plusia rutilifrons*, Walk., Cat. Lep. Het., xv, p. 1785 (1858).
*Plusia argenteo-guttata*, Pouj., Ann. Soc. Ent. Fr., 1887, p. lxviii.
*Plusia adscripta*, Staud., Rom. sur Lép., vi, p. 545, pl. x, fig. 7 (1892).



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The type of *rutilifrons* was from "North China." There were specimens from Yokohama in Pryer's collection, and I have received others from Hakodate and Nikko.

*Adscripta* was described from Amurland by Staudinger, and he states that he has also examples from Japan; it is certainly referable to *P. rutilifrons*, Walk., with which, as he does not mention it, Dr. Staudinger was probably unacquainted.

*Distribution.* NORTH CHINA; JAPAN; YESSO; AMURLAND.

1343. *Plusia jessica.*

*Plusia jessica*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 201 (1878); Ill. Typ. Lep. Het., iii, p. 22, pl. xlvi, fig. 6 (1879).

*Plusia serena*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 368 (1879).

The specimens in Pryer's collection were from Yokohama; the species also occurs at Tokio.

*Serena* appears to be only a slight modification of *P. jessica.*

*Distribution.* NORTH-WEST HIMALAYAS (*Hampson*); JAPAN.

1344. *Plusia ni.*

*Noctua ni*, Hübn., Noct., pl. lviii, fig. 284.

*Plusia ni*, Treit., Schmett., p. 189; Hampson, Fauna Brit. Ind., Moths, ii, p. 570 (1894).

One typical example, without exact locality, in Pryer's collection.

*Distribution.* SAN DOMINGO; ST. VINCENT (CAPE VERDE); ADEN; NORTH-WEST INDIA (*Hampson*); EUROPE. —JAPAN.

1345. *Plusia oxygramma.*

*Autographa oxygramma*, Hübn., Zutr., p. 37, figs. 769, 770.

*Plusia albostriata*, Brem. and Grey, Schmett., Nördl. China, p. 18 (1853); Mén. Cat. Mus. Petr., pl. xvi, fig. 10 (1863).

*Abrostola transfixa*, Walk., Cat. Lep. Het., xii, p. 884.

*Abrostola nubila*, Moore, Lep. Ceyl., iii, p. 549.

*Plusia oxygramma*, Alph., Iris., vii., p. 313 (1894).

Pryer's specimens were from Yokohama; I met with the species at Gensan, and my native collector obtained it at

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Hakodate. I have also received examples from Chang-yang. Occurs in July and August.

Hampson (Fauna Brit. Ind., Moths, ii, p. 571) includes *albostriata*, Brem., with *P. gutta*, Guen., and these names are placed under a series of *Plusia* in the National Collection at South Kensington, but the insect there indicated as *albostriata*, Brem., appears to be wrongly identified, as it really is a form of *P. gutta*, Guen.

### 1346. *Plusia pyropia.*

*Plusia pyropia*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 267 (1878); Hampson, Fauna Brit. Ind., Moths, ii, p. 572 (1894).

There were specimens from Oiwake in Pryer's collection, and my native collector took one example at Gensan.

*Distribution.* DHARMSÁLA; SIKHIM; NÁGAS (*Hampson*); JAPAN; COREA.

### 1347. *Plusia chrysitina.*

*Phalæna chrysitina*, Martyn, Psyche, pl. xxi (1797).
*Noctua aurifera*, Hübn., Noct., fig. 463.
*Plusia chrysitina*, Leech, Proc. Zool. Soc. Lond., 1889, p. 531.
*Plusia orichalcea*, Hampson, Fauna Brit. Ind., Moths, ii, p. 573 (1894).

I obtained this species in Satsuma in May, and at Tsuruga in July. The specimens in Pryer's collection were from Yokohama and the Loochoos, and I have received examples from Chang-yang that were taken in July, also from Moupin, Ta-chien-lu, Omei-shan, and Pu-tsu-fong, taken in June or July.

*Distribution.* NORTH INDIA; SENEGAL; MADAGASCAR; MAURITIUS; BOURBON; JAVA; ST. HELENA; TENERIFFE; JAPAN; LOOCHOO; CENTRAL and WESTERN CHINA.

### 1348. *Plusia chrysitis.*

*Noctua chrysitis*, Linn., Syst. Nat., x, p. 513; Hübn., Noct., figs. 272, 662, 663.
*Plusia nadeja*, Oberth., Etud. d'Entom., v, p. 84, pl. iii, fig. 10 (1880).
*Plusia chrysitis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 530.

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Pryer's specimens were from Yokohama and Nikko, I took examples at Gensan in June and at Hakodate in August, and have received the species from Ta-chien-lu.

The form which has the dark central fascia interrupted is found throughout the area of the species' distribution. This is one of the characters of *nadeja*, Oberth., which in addition has a more or less complete submarginal row of ochreous-brown dots; I have four examples of this form which vary in size from 24 to 34 millim. across the wings.

In *P. chrysitina* the submarginal line is very frequently broken up into spots.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA.

1349. *Plusia zosimi.*

*Noctua zosimi*, Hübn., Noct., fig. 651.
*Diachrysia zosimi*, Hübn., Verz. Schmett., p. 252.
*Plusia zosimi*, Guen., Noct., ii, p. 334.

There were three specimens from Yokohama in Pryer's collection; these agree very well with Amurland examples in my collection.

*Distribution.* EUROPE.—URAL; ALTAI; AMURLAND; JAPAN.

1350. *Plusia chryson.*

*Noctua chryson*, Esp., Schmett., iv, pl. cxli, fig. 2 (1789).
*Noctua orichalcea*, Hübn., Noct., pl. lvii, fig. 278.
*Plusia chryson*, Leech, Proc. Zool. Soc. Lond., 1889, p. 530.
*Plusia orichalcea*, Fabr. (part.), Hampson, Fauna Brit. Ind., Moths, ii, p. 573 (1894).

Pryer's specimens were from Yokohama and Oiwake; my collector took an example at Gensan.

*Distribution.* EUROPE.—AMURLAND; JAPAN; COREA.

1351. *Plusia excelsa.*

*Plusia excelsa*, Kretschmar, Berl. ent. Zeit., 1862, p. 135, pl. i, fig. 5.
*Plusia metabractea*, Butl., Trans. Ent. Soc. Lond., 1881, p. 190.

I obtained one example at Nemoro in August; and I have received specimens from Wa-shan, Ni-tou and Pu-tsu-fong, taken in July.

With the exception of one specimen, which is much

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darker, all these agree with an Amurland example in my collection.

*Distribution.* RUSSIA; URAL; ALTAI; AMURLAND; YESSO; WESTERN CHINA.

### 1352. *Plusia c-aureum.*

*Phalana c-aureum*, Knoch., Beitr., i, p. 7, pl. i, fig. 2 (1781).

*Noctua concha*, Fabr., Mant. Ins., p. 161 (1787); Hubn., Noct., figs. 287, 458.

*Plusia mikadina*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 202 (1878); Ill. Typ. Lep. Het., iii, p. 22, pl. xlvi, fig. 7 (1879).

*Plusia c-aureum*, Leech, Proc. Zool. Soc. Lond., 1889, p. 531.

There was a specimen from Oiwake in Pryer's collection, and I obtained one at Fushiki in the month of July. The species is also recorded from Yokohama and Hakodate.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO.

### 1353. *Plusia ornatissima.*

*Plusia ornatissima*, Walk., Cat. Lep. Het., xv, p. 1786 (1858); Hampson, Fauna Brit. Ind., Moths, ii, p. 572 (1894).

*Plusia locuples*, Oberth., Etud. d'Entom., v, p. 85, pl. ix, fig. 3 (1880).

Pryer's specimens were from Yokohama and Nikko; my native collector obtained the species at Hakodate in June or July and at Gensan in the latter month. I have also received one example from Chang-yang, where it was captured in June.

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM (*Hampson*); JAPAN; YESSO; COREA; AMURLAND; CENTRAL CHINA.

### 1354. *Plusia festucæ.*

*Noctua festucæ*, Linn., Syst. Nat., x, p. 513; Hübn., Noct., fig. 277.

*Plusia festucæ*, Treit., Schmett., v, p. 165.

Occurs at Yokohama, Oiwake, Tsuruga, and Fushiki in July.

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The Japanese specimens in my collection are rather paler, especially on the secondaries, than European examples; the metallic spots may or may not be confluent, and the fringes of secondaries are not pinkish-brown as in typical examples. This form may agree with that which Staudinger refers to as *putnami*, Grote, and *festata*, Graeser (Rom. sur Lép., vi, p. 543).

*Distribution.* EUROPE.—AMURLAND; JAPAN; NORTH AMERICA.

### 1355. *Plusia tetragona.*

*Plusia tetragona*, Walk., Cat. Lep. Het., xii, p. 932 (1857); Hampson, Fauna Brit. Ind., Moths, ii, p. 574 (1894).

*Plusia purissima*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 202 (1878); Ill. Typ. Lep. Het., ii, p. 35, pl. xxxi, fig. 11 (1878).

The specimens in Pryer's collection were from Yokohama. *Purissima* was described from Tokio, I took an example at Nagasaki in May and one at Gensan in July, and I have received the species from Chang-yang, Ship-y-shan, Moupin, Ta-chien-lu, Omei-shan, Huang-mu-chang, and the province of Kwei-chow.

*Distribution.* DHARMSÁLA; KULU (*Hampson*); JAPAN; KIUSHIU; COREA; CENTRAL and WESTERN CHINA.

### 1356. *Plusia splendida.*

*Deva splendida*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 203 (1878); Ill. Typ. Lep. Het., iii, p. 23, pl. xlvi, fig. 8 (1879).

*Plusia intracta*, Staud., Stett. ent. Zeit., 1888, p. 262; Rom. sur Lép., vi, p. 537, pl. x, fig. 8 (1892).

The specimens in Pryer's collection were from Nikko and Yesso; Butler's type was from Hakodate.

*Distribution.* JAPAN; YESSO; AMURLAND.

### 1357. *Plusia hampsoni*, sp. n.

Primaries pale violet-grey, in certain lights, with a brassy sheen most conspicuous on the lower half of median third and on the outer marginal area; basal area traversed by olivaceous-grey wavy bands; antemedial line whitish, slightly angled on submedian nervure and more strongly so below the cell, not clearly defined on the costal area; postmedial line lilacine, curved and recurved, edged

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on each side by olivaceous-grey; submarginal line paler bordered with olivaceous-grey, sinuous, angled below the costa; apex blackish, costa between two outer lines dotted with blackish; inner two-thirds of the space between ante- and postmedial lines darker grey edged with blackish, three diffuse blackish spots on the costa; reniform stigma black with paler outline, orbicular of the ground-colour with whitish outline which is marked with black, a black ringed white spot below it and a blackish spot before it; fringes olivaceous-grey chequered with white and preceded by series of whitish lunules and black dots. Secondaries fuliginous-grey with darker discal marks and central transverse line; fringes pale, chequered with darker from vein 2 to outer angle. Under surface pale brown, basal half clouded with blackish; postmedial line black; submarginal line blackish, irregular, the area enclosed by these two lines is suffused with blackish as also is the venation beyond the submarginal line: secondaries powdered with blackish; antemedial line blackish, interrupted; postmedial line black followed by a blackish suffusion and indications of a submarginal line; fringes of all the wings chequered with black.

Expanse 36 millim.

One male specimen from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

### 1358. *Plusia leonina.*

*Plusia leonina*, Oberth., Etud. d'Entom., x, p. 26, pl. iii, fig. 11 (1884).

*Plusia humeralis*, Butl., Trans. Ent. Soc. Lond., 1886, p. 135.

Three specimens from Yesso in Pryer's collection.

*Distribution.* AMURLAND; YESSO.

### 1359. *Plusia agramma.*

*Plusia agramma*, Guen., Noct., ii, p. 327 (1852); Moore, Lep. Ceyl., iii, p. 72, pl. clii, fig. 3, 3a (1884); Hampson, Fauna Brit. Ind., ii, p. 574 (1894).

*Plusia fumifera*, Graes., Berl. ent. Zeit., 1889, p. 263.

There were specimens in Pryer's collection, and those were probably from Yokohama. My native collector obtained the species in Kiushiu. *Fumifera* is a form from Amurland.

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*Distribution.* SIKHIM; BOMBAY; CANARA; CEYLON; JAVA; AUSTRALIA (*Hampson*); JAPAN; KIUSHIU; AMURLAND.

1360. *Plusia hebetata.*

*Plusia hebetata*, Butl., Ill. Typ. Lep. Het., vii, p. 71, cxxxi, fig. 1 (1889).

One example in Pryer's collection previously confused with *P. agramma*, Guen.

*Distribution.* KULU (*Hampson*); JAPAN.

1361. *Plusia ochreata.*

*Plusia ochreata*, Walk., Cat. Lep. Het. Suppl., iii, p. 839 (1865); Moore, Lep. Ceyl., iii, p. 72, pl. cli, fig. 4 (1884); Hampson, Fauna Brit. Ind., Moths, ii, p. 573 (1894).

*Plusia cornucopiæ*, Snell., Tijdschr. v. Ent., xxiii, p. 72, pl. vi, fig. 3 (1880).

My native collector obtained a specimen at Gensan and there was one from Yokohama in Pryer's collection.

*Distribution.* HONG-KONG, FORMOSA; SIMLA; NÁGAS; NILGIRIS; CEYLON (*Hampson*); CELEBES; JAPAN; COREA.

1362. *Plusia cheiranthi.*

*Plusia cheiranthi*, Tausch., Mém. Mosc., 1809, p. 322, pl. ii, fig. 6.

*Plusia eugenia*, Eversm., Bull. Nat. Mosc., 1841, i, p. 32, pl. iii, figs. 3, 4.

*Plusidia abrostoloides*, Butl., Ill. Typ. Lep. Het., iii, p. 28, pl. xlvii, fig. 5 (1879).

There were two specimens from Oiwake in Pryer's collection.

*Distribution.* EUROPE; URAL.—AMURLAND; JAPAN.

Genus TELESILLA.

Herrich-Schæffer, Schmett., vi (1856).

1363. *Telesilla amethystina.*

*Noctua amethystina*, Hübn., Noct., figs. 597, 598.

*Plusia amethystina*, Treit., Schmett., v, 3, p. 136.

*Placodes amethystina*, Boisd., Ind. Méth., p. 129.

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*Telesilla amethystina*, Staud., Rom. sur Lép., vi, p. 532 (1892).

I obtained the species at Gensan, and my native collector at Hakodate ; I have also received two specimens from Chang-yang. June and July.

Eastern Asian specimens are less marked with purplish on the primaries than European examples.

*Distribution.* EUROPE.—AMURLAND ; JAPAN ; YESSO ; COREA ; CENTRAL CHINA.

### 1364. *Telesilla virgo.*

*Plusia virgo*, Treit., Schmett., x, 2, p. 130 (1835); Herr.-Schäff., Schmett., Eur., i, pl. xlix, figs. 248, 249.
*Diasterna virgo*, Guen., Noct., ii, p. 317 (1852).
*Telesilla virgo*, Staud., Rom. sur Lép., vi, p. 532 (1892).

Pryer's specimens were from Yokohama and Yesso; I obtained some dark examples at Gensan in June and July.

*Distribution.* EUROPE.—AMURLAND ; JAPAN ; YESSO.

### 1365. *Telesilla pallida*, sp. n.

Primaries silvery-grey slightly suffused with fuscous with darker transverse markings ; a short longitudinal blackish streak on basal area ; antemedial line dusky, double ; postmedial line dusky, finely dentate, edged outwardly with the ground-colour ; submarginal line of the ground-colour preceded by a brownish grey band ; orbicular stigma placed obliquely, white edged with black, reniform outlined in white; between the stigmata there is a dark cloud and from this there is a diffuse band to the inner margin ; fringes preceded by an interrupted brownish line. Secondaries whitish with a dusky discal dot and some indications of transverse bands. Under surface of primaries fuscous with darker postmedial and submarginal lines : secondaries white suffused with fuscous on costal area, with indications of ante- and postmedial lines ; a black discal dot and diffuse fuscous submarginal band.

Expanse 34 to 38 millim.

Eight specimens from Pu-tsu-fong, taken in June or July.

*Habitat.* WESTERN CHINA.

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1366. *Telesilla* (?) *fuscomaculata.*

*Placodes fuscomaculata,* Bremer and Grey, Fauna Nordl. China's, p. 17.

Described from North China.

Genus ABROSTOLA.

Ochs.; Hampson, Fauna Brit. Ind., Moths, ii, p. 517 (1894).

1367. *Abrostola triplasia.*

*Noctua triplasia,* Linn., Syst. Nat., x, p. 517.
*Noctua triplasia,* Esp. Schmett., iv, pl. clxix, figs. 1—3.
*Habrostola triplasia,* Leech, Proc. Zool. Soc. Lond., 1889, p. 534.

There were specimens in Pryer's collection from Yokohama and Oiwake, I have also examples from Chia-kou-ho, Pu-tsu-fong, and Moupin. All these I am inclined to refer to *C. triplasia.*

*Distribution.* EUROPE.—AMURLAND; JAPAN; WESTERN CHINA.

1368. *Abrostola abrostolina.*

*Inguridia abrostolina,* Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 354 (1879).
*Habrostola urentis,* Leech, Proc. Zool. Soc. Lond., 1889, p. 535.

Pryer's specimens were from Yokohama and Oiwake, and my collector obtained the species in the island of Kiushiu.

*Distribution.* JAPAN; KIUSHIU.

Genus PLUSIODONTA.

Guen.; Hampson, Fauna Brit. Ind., Moths, ii, p. 577 (1894).

1369. *Plusiodonta cœlonota.*

*Plusia agens,* Feld., Reis. Nov., pl. cx, fig. 32 (1874).
*Plusiodonta auripicta,* Moore, Lep. Atk., ii, p. 150 (1882).
*Plusiodonta cœlonota,* Koll.; Hampson, Fauna Brit. Ind., Moths, ii, p. 578 (1894).

There were specimens from Loochoo in Pryer's collection,

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and I have received others from Omei-shan, Ichang, and Corea.

*Distribution.* Throughout INDIA, CEYLON, and BURMA; ANDAMANS; JAVA (*Hampson*); LOOCHOO; CENTRAL and WESTERN CHINA; COREA.

### 1370. *Plusiodonta casta.*

*Platydia casta*, Butl., Ill. Typ. Lep. Het., ii, p. 54, pl. xxxviii, fig. 1 (1878).
*Plusiodonta casta*, Staud., Rom. sur Lép., vi, p. 530 (1892).

I obtained specimens at Ningpo in April and at Fushiki and Gensan in July. I have also received examples from Yokohama, from Gensan where they were taken in August, and from Ichang, Kiukiang, and Ni-tou.

*Distribution.* AMURLAND; JAPAN; CENTRAL, EASTERN, and WESTERN CHINA; COREA.

## Genus PLUSILLA.

Staudinger, Rom. sur Lép., vi, p. 533 (1892).

### 1371. *Plusilla rosalia.*

*Plusilla rosalia*, Staud., Rom. sur Lép., vi, p. 533, pl. ix, fig. 11 (1892).

Of this species, which Staudinger describes from Amurland, I have one example from Ichang and one from Chang-yang, both taken in August.

*Distribution.* AMURLAND; CENTRAL CHINA.

## Genus CALESIA.

Guen.; Hampson, Fauna Brit. Ind., Moths, ii, p. 579 (1894).

### 1372. *Calesia dasyptera.*

*Erebus dasypterus*, Koll., Hügel's Kaschmir, iv, p. 476 (1848).
*Erebus leucostigma*, Koll., Hügel's Kaschmir, iv, p. 476 (1848).
*Calesia comosa*, Guen., Noct., iii, p. 258, pl. xxi, fig. 7 (1852).
*Calesia leucostigma*, Moore, Lep. Ceyl., iii, p. 182, pl. clxxi, fig. 5 (1885).

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*Calesia dasyptera*, Moore, Lep. Ceyl., iii, p. 182 (1885); Hampson, Fauna Brit. Ind., Moths, ii, p. 580 (1894).

Recorded from China, but my collectors did not meet with it in any part of the country that they visited.

*Distribution.* CHINA; throughout INDIA, CEYLON, and BURMA (*Hampson*).

1373. *Calesia hæmorrhoda.*

*Calesia hæmorrhoda*, Guen., Noct., iii, p. 258 (1852).
*Calesia patna*, Feld., Reis. Nov. Lep., iv, pl. cxvii, fig. 17.
*Pasipeda hæmorrhoa*, Moore, Lep. Ceyl., iii, p. 183 (1885).
*Calesia hæmorrhoa*, Hampson, Fauna Brit. Ind., Moths, ii, p. 579 (1894).

Specimens were received from Chia-ting-fu and Huang-mu-chang, these were taken in June or July.

*Distribution.* INDIA, CEYLON, and BURMA (*Hampson*); WESTERN CHINA.

Subfamily *FOCILLINÆ.*

Genus MECODINA.

Guen.; Hampson, Fauna Brit. Ind., Moths, iii, p. 3 (1895).

1374. *Mecodina cineracea.*

*Psimada cineracea*, Butl., Ill. Typ. Lep. Het., iii, p. 27, pl. xlvii, fig. 4 (1879).
*Egnasia costipannosa*, Moore, Lep. Atk., ii, p. 184 (1882).
*Mecodina cineratia*, Hampson, Fauna Brit. Ind., Moths, iii, p. 3 (1895).

Pryer's specimens were from Yokohama; I obtained the species in Satsuma in May and at Nagasaki in June, and my native collector in Kiushiu. I have also received examples from Wa-shan (May) and Chia-kou-ho (July).

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM; KHÁSIS (*Hampson*); JAPAN; KIUSHIU; WESTERN CHINA.

1375. *Mecodina duplicata*, sp. n.

Fuscous-grey with a purplish tinge. Primaries have three brownish marks on the costa, from the second of which an irregular brownish fascia runs to the inner margin, this is followed by the obscure post-medial line; a dusky lunule at end of the cell. Secondaries have

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two brownish lines before the middle and a sinuous one beyond the middle, the former diverge towards the costa and the latter is edged with yellowish-brown towards the abdominal margin. Under surface fuscous with two almost parallel darker lines on all the wings, the inner one not so distinct as the outer.

Expanse 30 millim.

One female specimen taken at Ship-y-shan in September.
*Habitat.* CENTRAL CHINA.
Allied to *M. analis*, Swinhoe.

### 1376. *Mecodina lankesteri*, sp. n.

Primaries pale lilacine-grey clouded with fuliginous-grey on the lower half of outer area; sub-basal and antemedial bands fuliginous-grey, the latter broadest towards the costa; antemarginal line fuliginous-grey, undulated, preceded by a broad transverse shade of the same colour; there is a velvety black, triangular patch on the costa towards the apex, this is outwardly edged with yellow and is indented towards its truncate apex; some yellow markings and a black spot at inner angle; a whitish dot and line at end of the cell. Secondaries pale lilacine-grey suffused with fuliginous-grey on median third and on middle of outer area; there are two fine, dark, antemedial lines; the submarginal is wavy, of the ground-colour, but obscure, towards the costa, yellow towards the abdominal margin where it unites with a yellow patch at the anal angle, this patch has a linear black spot upon it. Fringes of the ground-colour chequered with darker. Under surface pale brown, the primaries suffused with fuscous on the discal area; all the wings have three, dusky, transverse lines, but those on the primaries are not very distinct.

Expanse 40–42 millims.

Two male specimens from Omei-shan, and one from Chia-kou-ho. Occurs in June and July.
*Habitat.* WESTERN CHINA.

### 1377. *Mecodina externa*, sp. n.

Pale lilacine-grey irrorated and clouded with brownish. Primaries clouded on basal area, along two-thirds of the costal area, and the lower portion of the outer area; sub-basal and antemedial lines dark brown, both wavy; postmedial line dark brown, double and highly angulated, preceded by a dark brown transverse shade and followed by a ziczac line of the same colour; submarginal line yellowish but only distinct on the costal area, where it intersects a velvety black triangular patch, and towards the inner margin where it is internally

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edged by some spots of the same colour as the costal patch, the continuation of the line between these two points is indicated by yellow and black dots; reniform stigma outlined in dark brown; orbicular stigma punctiform. Secondaries have an obscure central transverse line and a yellowish submarginal line, the latter is diffuse and sinuous and is bordered on each side with dark brown. Fringes preceded by a wavy dark brown line increasing in width towards the angles. Under surface fuscous-brown; primaries have a dusky postmedial line and an obscure, pale, submarginal line; secondaries have three wavy, dusky, transverse lines all terminating nearly together on the abdominal margin.

Expanse 50 millim.

One female specimen taken at Chang-yang in July.
*Habitat.* CENTRAL CHINA.

### 1378. *Mecodina costimacula*, sp. n.

Grey slightly suffused with fuscous. Primaries have four black spots on the costa, the third large and uniting with the black reniform stigma; the orbicular stigma is black, punctiform; there are indications of a dusky submarginal line, this is marked with black about the middle and is preceded and followed by other dusky lines; a marginal series of black points. Secondaries have a black discal dot, placed on a dusky, diffuse, transverse band; a dusky postmedial line, indistinct towards the costa; submarginal line whitish, wavy, broadly bordered internally with blackish; marginal points black, inwardly edged with whitish. Under surface fuscous-grey; all the wings have black discal marks and two dusky transverse lines beyond, the latter commencing in blackish marks on the costa of primaries.

Expanse 36 millim.

One female specimen from Chia-kou-ho, taken in July.
*Habitat.* WESTERN CHINA.

### 1379. *Mecodina ambigua*, sp. n.

Greyish-brown with olive-brown markings. Primaries have four spots on the costa, the fourth is the largest and crescent-shaped; reniform stigma olive-brown as also is the dot representing the orbicular; a cloud on middle of the outer margin; an obscure central shade from lower end of the reniform to the inner margin; there are indications of transverse lines each commencing in a costal spot. Secondaries have obscure antemedial and medial lines and a broad olive-brown postmedial band, the inner edge of this band is diffuse and the outer edge is obtusely angled about the middle; submarginal

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line olive-brown but not well defined. Fringes preceded by an olive-brown lunulated line. Under surface fuscous; all the wings have a blackish dot and an indistinct curved line beyond.

Expanse 30–36 millim.

Six specimens, including both sexes, from Moupin, taken in June.

*Habitat.* WESTERN CHINA.

### 1380. *Mecodina subviolacea.*

*Saraca subviolacea*, Butl., Trans. Ent. Soc. Lond., 1881, p. 581.

*Thyridospila virgata*, Swinhoe, Proc. Zool. Soc. Lond., 1889, p. 419.

*Mecodina subviolacea*, Hampson, Fauna Brit. Ind., Moths, iii, p. 4 (1895).

Described from Yokohama. Specimens were obtained in Satsuma and at Nagasaki in May, by myself; and at Gensan in July, by a native collector. I have also received the species from Ichang, Ta-chien-lu, Omei-shan, Chia-kou-ho, Wa-ssu-kow, and Pu-tsu-fong, these were taken in June and July.

*Distribution.* NORTH-WEST HIMALAYAS; MARGHARITA; ASSAM (*Hampson*); CENTRAL and WESTERN CHINA; COREA; JAPAN.

### 1381. *Mecodina subcostalis.*

*Ophiusa subcostalis*, Walk., Cat. Lep. Het., xxxiii, p. 969 (1865).

Two specimens from Nagasaki, one from Kiukiang, one from Chia-kou-ho, and one from Gensan.

*Distribution.* EASTERN, CENTRAL and WESTERN CHINA; KIUSHIU; COREA.

### 1382. *Mecodina nubiferalis.*

*Platyja nubiferalis*, Leech, Entom., xxii, p. 64, pl. ii, fig. 8 (1889).

I obtained specimens in Satsuma in May and at Nagasaki in June. I have received others from Mr. Manley of Yokohama.

*Habitat.* JAPAN and KIUSHIU.

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## Genus PSIMADA.

Walk., Cat. Lep. Het., xv, p. 1827 (1858).

### 1383. *Psimada quadripennis.*

*Psimada quadripennis*, Walk., Cat. Lep. Het., xv, p. 1828 (1858); Moore, Lep. Ceyl., iii, p. 171, pl. clxx, fig. 2 (1885); Hampson, Fauna Brit. Ind., Moths, iii, p. 7 (1895).

Hampson records this species from North China. I did not receive specimens from any part of China.

*Distribution.* NORTH CHINA; CANARA; CEYLON; BURMA; ANDAMANS (*Hampson*).

## Genus ZETHES.

Ramb.; Hampson, Fauna Brit. Ind., Moths, iii, p. 7 (1895).

### 1384. *Zethes trimantesalis.*

*Egnasia trimantesalis*, Walk., Cat. Lep. Het., xvi, p. 220 (1858).

*Saraca trimantesalis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 567.

*Zethes perturbans*, Hampson, Fauna Brit. Ind., Moths, iii, p. 9 (1895).

I obtained specimens in Satsuma and at Nagasaki in May, and others were taken by native collector at Gensan in July. The species was obtained in most of the Chinese localities visited by my collectors.

*Distribution.* SIKHIM; SYLHET; NÁGAS; BURMA (*Hampson*); KIUSHIU; CORÉA; CENTRAL and WESTERN CHINA.

### 1385. *Zethes flavomacula.*

*Pangrapta flavomacula*, Staud., Stett. ent. Zeit., 1888, p. 279; Rom. sur. Lép., vi, p. 619, pl. xiii, fig. 7 (1892).

*Saraca flavomacula*, Leech, Proc. Zool. Soc. Lond., 1889, p. 567.

Specimens were obtained by myself at Ningpo in April, at Gensan in June, and at Tsuruga in July. I have also received the species from the Loochoo islands.

*Distribution.* AMURLAND; EASTERN CHINA; COREA; JAPAN; LOOCHOO.

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### 1386. *Zethes mandarina*, sp. n.

Greyish sparingly dusted with fuscous-brown. Primaries have a triangular whitish-grey patch on the costa towards the apex; sub-basal and antemedial lines blackish, curved, the latter indented below the costa; postmedial line blackish, outwardly oblique to lower edge of the costal patch thence waved obliquely to the inner margin, the space between this line and a diffuse central line is suffused with chocolate-brown; submarginal line blackish, wavy and dotted with black; stigmata outlined in brown but not distinct. Secondaries have a dusky oblique antemedial line, and a black wavy postmedial line, the latter is slightly angulated before the middle and is followed by a blackish transverse shade; submarginal line dusky, undulated, represented by black dots towards the abdominal margin; the dusky discal mark is surrounded with whitish. Fringes of the ground-colour marked with darker and preceded by a thin black interrupted line. Under surface grey irrorated with brown, the secondaries and outer marginal area of primaries tinged with ochreous and suffused with fuscous; all the wings have three brown transverse lines, the two outer wavy and pale edged, with a dusky shade between them; the stigmata on the primaries are reproduced in greyish and the secondaries have a black lunule surrounded with greyish scales.

Expanse 40 millim.

One male specimen from Ichang and one female from Chow-pin-sa, taken in June.

Allied to *Z. trimantesalis*, Walk., but differs from that species in the direction of the lines, and in the greyer coloration.

*Habitat.* CENTRAL and WESTERN CHINA.

### 1387. *Zethes cana*, sp. n.

Pale leaden-grey with a lilacine tinge, especially on the outer marginal area. Primaries have the usual three fuscous-brown transverse lines, but the sub-basal is obscure; the antemedial is curved and has a small dentation below the costa; the postmedial is curved beyond the cell thence sinuous to the inner margin; the costal triangle is whitish tinged with lilacine, its outer edge diffuse, and there is a similar coloured patch at the apex of the wing; below the costal triangle there is a rufous cloud and the wavy submarginal line, represented by black points, is edged towards the costa with more or less connected creamy spots; reniform stigma creamy-white outlined in brown, central lunule fuscous, orbicular stigma outlined in brown. Secondaries have fuscous ante- and postmedial line, the



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latter broadly suffused on either side with fuscous-brown; submarginal line whitish, serrate, interrupted, with black dots upon it and some black specks between veins 2 and 4. Fringes brown, slightly crenulate. Under surface brown: primaries suffused with whitish on the costal area; antemedial line dark fuscous, erect; postmedial line double, dark fuscous, curved beyond the cell; submarginal line indistinct; stigmata whitish, the reniform with two black dots upon it: secondaries have reddish-brown ante- and postmedial lines which appear to be continuations of those on the primaries; submarginal line represented by two series of creamy-white lunules, which are followed towards the anal angle by rather yellower spots.

Expanse 32 millim.

Six specimens, including both sexes, from Kiukiang, where they were taken in May, June and July; I have also one male example obtained by myself at Ningpo in the month of April.

*Habitat.* EASTERN and CENTRAL CHINA.

1388. *Zethes trilineata*, sp. n.

Greyish-brown, faintly tinged with lilacine on outer marginal areas. Primaries have three distinct lines; the antemedial is fuscous-brown, curved, indented below the costa and above the inner margin; the medial is fuscous-brown, sinuous, and runs almost direct from the costa to the inner margin; the postmedial is blackish, elbowed beyond the cell and sinuate towards the inner margin; the space between medial and postmedial lines suffused with brown; the submarginal line wavy but indistinct except towards the costa where it is edged with luteous and preceded by a rufous-brown patch edged with fuscous-brown; the costal triangle is greyish irrorated with fuscous, and there is an apical patch of the same colour; reniform and orbicular stigmata outlined in fuscous-brown, the former with rufous-brown centre. Secondaries have oblique antemedial, and elbowed postmedial lines, the former fuscous-brown and the latter blackish; submarginal line brownish, dentate, edged with paler; discal lunule blackish with pale surroundings. Fringes brown, tips white chequered with fuscous-brown, a black line at their base and one before the white tips; crenulate on the secondaries. Under surface pale ochreous-brown, suffused with whitish on costal area of primaries, and clouded with darker brown on outer marginal areas (only the lower portion on primaries): primaries have an erect medial line and an elbowed postmedial line, fuscous-brown approximating on the costa; the stigmata are whitish and the reniform has two blackish dots upon it: secondaries have

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fuscous-brown ante- and postmedial lines, the first oblique and the second curved about the middle; a submarginal series of pale spots ringed with pale fuscous; discal lunule blackish.

Expanse 30–38 millims.

Five specimens from Kiukiang, four from Ningpo, and two from the province of Kwei-chow; both sexes are represented. June and July.

*Habitat.* CENTRAL, EASTERN, and WESTERN CHINA.

Most nearly allied to *Z. flavomaculata*, Staud., but darker in colour; all the transverse lines are bolder and those on the secondaries differently shaped.

### 1389. *Zethes dentilineata*, sp. n.

Differs from *Z. trilineata* in being rather greyer in colour, especially on the secondaries. The antemedial line of primaries is curved and slightly indented below the costa, the postmedial line is more deeply elbowed, and the costal triangle is whiter; all the wings have a blackish, highly dentate, submarginal line, which is clearly defined on both surfaces; the fringes of the secondaries are hardly crenulate.

Expanse 40 millim.

One female specimen from Wa-ssu-kow, taken in June.

*Habitat.* WESTERN CHINA.

### 1390. *Zethes indentalis.*

*Saraca indentalis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 567, pl. lii, fig. 4.

I obtained three specimens in Satsuma in May, three at Nagasaki in June, and one at Gensan in July. One example was taken by native collector at Hakodate and one at Ningpo, both in the month of June.

Staudinger considers that his *Z.* (*Pangrapta*) *suaveola* is identical with my *indentalis*. If his figure (Rom. sur. Lép., vi, pl. xiii, fig. 8) is correct the shape of the pale markings on the costa towards apex is quite different, as also is the angulation and character of the postmedial band. The ground-colour of my insect is much paler than that of *suaveola*.

In *indentalis* the outer margins of all the wings are strongly angled in the male and less so in the female.

*Distribution.* KIUSHIU; YESSO; COREA; WESTERN CHINA.

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## 1391. *Zethes curtalis.*

*Egnasia curtalis,* Walk., Cat. Lep. Het., xxxiv, p. 1177 (1865).

Described from Shanghai; there are also specimens from South-east Corea and Japan in the National Museum at South Kensington.

*Distribution.* EASTERN CHINA; COREA; JAPAN.

## 1392. *Zethes saucia,* sp. n.

Pale brown, irrorated with fuscous and suffused with lilacine-grey. Primaries have indications of a brown sub-basal line; antemedial line brown, slightly curved, indented below the costa; postmedial line fuscous-brown, obtusely angled beyond the cell thence sinuous to inner margin, this line has an internal diffuse brown border which is traversed by a dusky, sinuous, line; submarginal line fuscous, wavy, preceded on the costal area by a rufous-brown cloud; a greyish, triangular, costal patch between postmedial line and brown cloud, a small irregular greyish apical patch; reniform and orbicular stigmata outlined in fuscous-brown. Secondaries have fuscous ante- and postmedial lines, the first almost straight and the second slightly curved and outwardly edged with leaden-grey; submarginal line brown, dentate, outwardly edged with paler; discal lunule blackish surrounded with whitish. Fringes brown preceded by a black line, another black line before the tips which are white chequered with fuscous-brown; the fringes of the secondaries are crenulate. Under surface ochreous-brown suffused with whitish on the costal area of the primaries; all the wings have fuscous antemedial and postmedial lines, the latter double and on the secondaries traverse a diffuse leaden-grey band; the stigmata on primaries are reproduced in whitish, the reniform with two blackish dots upon it; secondaries have a blackish discal lunule and a submarginal series of clear ochreous spots.

Expanse 32–34 millims.

Eleven specimens, including both sexes, from Kiukiang; two males from Chang-yang, and one from Ningpo. June and July.

*Habitat.* EASTERN, CENTRAL, and WESTERN CHINA.

Allied to *Z. shivula,* Guen., and superficially very like *Z. trimantesalis,* Walk.

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### 1393. *Zethes squamea*, sp. n.

Greyish-brown with a lilacine tinge; transverse lines and other markings similar to those of *Z. trilineata*, but the postmedial line of primaries is rather more wavy below the elbow which is more pronounced, the costal triangle is whiter and the reniform stigma yellower; on the secondaries the postmedial line is obtusely angled beyond the cell, the submarginal line is more highly dentate, and the discal lunule is surrounded by a cluster of semi-hyaline spots. The differential characters are also apparent on the under surface.

Expanse ♂ 34 millim., ♀ 38 millim.

One example of each sex from Chang-yang taken in July.

*Habitat.* CENTRAL CHINA.

### 1394. *Zethes umbrosa*, sp. n.

Outer margin of all the wings crenulate. Primaries brownish, suffused with violet-grey; sub-basal line indistinct; ante- and postmedial lines darker, the former wavy and curved, the latter outwardly oblique to upper end of the cell where it is obtusely angled thence wavy to inner margin; submarginal line wavy, indistinct, marked with whitish towards the costa; costal triangle white, dotted with brown on the costa; reniform and orbicular stigmata light brown, ochreous in the female, outlined in dark brown, the former with a brown central lunule, the latter placed on the antemedial line; medial line of the same colour and almost parallel with the postmedial line, the space between it and the antemedial whitish towards the costa. Secondaries pale brownish-grey with a cluster of three or four semi-hyaline discal dots; dark brown antemedial and medial lines, the former oblique, the latter wavy slightly angled before the middle and followed by a diffuse brownish shade; postmedial line brown, represented by dots about the middle, wavy and marked with paler towards the abdominal margin. Fringes ochreous-brown, marked with darker at the ends of the nervules, a dark lunulated line at their base and another before their tips. Under surface brown; primaries suffused and powdered with whitish especially on costal area, the stigmata are reproduced in whitish; three dark transverse lines, the first vertical and wavy, the second sometimes black on the costa, the third marked with dark brown above the middle.

Expanse 32–38 millim.

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Two male specimens from Kiushiu, two females from Chang-yang, and one female from Chia-kou-ho.

*Distribution.* KIUSHIU; CENTRAL and WESTERN CHINA.

### 1395. *Zethes ingratata*, sp. n.

Pale whity-brown all the wings tinged with fuscous and the primaries are clouded with fuscous-brown on the basal and outer marginal areas. Primaries have three fuscous-brown transverse lines, the antemedial and medial indistinct, the postmedial wavy, curved beyond the cell; submarginal line whitish, wavy; stigmata outlined in fuscous-brown with black centres. Secondaries have a black lunule with some whitish dots adjoining it, and three wavy, fuscous-brown transverse lines, the second and third rather broad; submarginal line whitish with blackish dots on it. Under surface whitish powdered and clouded with fuscous-brown, transverse lines and stigmata as above, but the lines are very obscure on the primaries.

Expanse 36 millim.

One female, in rather poor condition, taken at Pu-tsu-fong in June or July.

*Habitat.* WESTERN CHINA.

### 1396. *Zethes albistigma.*

*Zethes albistigma*, Hampson, Journ. Bomb. Nat. Hist. Soc., xi, p. 457 (1897).

One example taken at Chang-yang in August.

*Distribution.* KHÁSIS (*Hampson*); CENTRAL CHINA.

### 1397. *Zethes vasava.*

*Eynasia vasava*, Butl., Trans. Ent. Soc. Lond., 1881, p. 582.
*Pungrapta incisa*, Staud., Stett. Ent. Zeit., 1888, p. 278; Rom. sur Lép., vi, p. 619, pl. xiii, fig 6 (1892).
*Saraca vasava*, Leech, Proc. Zool. Soc. Lond., 1889, p. 568.

Described from Yokohama. One example was taken by native collector at Hakodate in June.

*Distribution.* JAPAN; YESSO; AMURLAND.

### 1398. *Zethes porphyrea.*

*Eynasia porphyrea*, Butl., Ill. Typ. Lep. Het., iii, p. 66, pl. lvii, fig. 6 (1879).

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Described from Yokohama, there were two specimens in Pryer's collection, one from Yokohama, the other without exact locality ; I have also received an example from Mr. Manley of Yokohama.

*Habitat.* JAPAN.

### 1399. *Zethes textilis.*

*Saraca textilis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 567, pl. lii, fig, 12.

I took one example at Foochau in April and another at Gensan in July; my native collector obtained one at Ningpo in June. I have also received one specimen from Moupin and one from Chang-yang, the former taken in June and the latter in August.

Hertz obtained this species to the North of Pekin.

*Distribution.* COREA ; NORTHERN, EASTERN, CENTRAL, and WESTERN CHINA.

### 1400. *Zethes pulverea*, sp. n.

Outer margins of all the wings slightly angled and the fringes crenulate. Wings purplish-brown sparingly powdered with bluish-grey. Primaries with bluish-grey ante- and postmedial lines, the first is curved and outwardly bordered with dark chocolate-brown ; the second is obtusely angled beyond the cell thence sinuous to inner margin, inwardly bordered with chocolate-brown, paler on the costa and extending as far as the blackish, wavy, medial line ; submarginal line black, wavy towards anal angle and with black marks upon it towards the apex ; reniform stigma outlined in blackish but obscure ; orbicular stigma blackish, punctiform ; triangular costal patch irrorated with bluish-grey, a pale chocolate patch beyond it. Secondaries have a bluish-grey postmedial line which traverses the outer edge of a diffuse chocolate-brown band ; submarginal line bluish-grey, wavy, with a large angular projection above the middle ; the angle is filled in with dark chocolate-brown and the line thence to the abdominal margin is bordered inwardly with the same colour, there is a pale chocolate-brown line before the border. Fringes pale chocolate-brown with a black line at their base and another before their paler, blackish chequered, tips. Under surface brownish : primaries powdered with whitish on the costal area, with indications of darker transverse lines and bands ; stigmata outlined in whitish : secondaries have three whitish, wavy,

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Expanse 30–32 millim.

One female from Kiukiang, taken in May, and one fro
Chang-yang, taken in June.

*Habitat.* CENTRAL CHINA.

### 1401. *Zethes adusta*, sp. n.

Primaries light brown powdered and suffused with greyish, fo
dark brown transverse lines, but the first, sub-basal is obscure ; t
antemedial and medial lines are curved ; the postmedial is external
edged with whitish, followed by a pale triangle, on the costal ar
and has a strong outward projection beyond the cell, the spa
between this and medial line is brown ; there are some whitish d
on apical third of the costa and a suffused rufous cloud on the apic
area ; reniform stigma obscure, outlined in blackish ; orbicul
stigma annular, brown. Secondaries blackish on basal two-thir
outer third light brown ; postmedial line whitish, wavy ; disc
lunule blackish surrounded with whitish ; the outer limit of t
dark portion of the wing has a velvety black, interrupted, bord
which is edged with rufous, angled opposite the cell and does n
extend to the costa. Fringes crenulate, brown, tipped with greyi
and preceded by a fine black line. Under surface cinereous, powder
with whitish, on basal three-fourths of all the wings, ochreous-yell
on outer fourth except on the costa of primaries, costal area
primaries suffused with whitish ; all the wings have dusky ant
and postmedial lines, the primaries with two whitish spots in t
cell.

Expanse 28 millim.

One male specimen from Moupin and two females fro
Chang-yang. June.

*Habitat.* CENTRAL and WESTERN CHINA.

Allied to *Z. disruptalis*, Walk., but distinguished by t
postmedial line being angulated instead of curved. I ha
described a female example as it is in fine condition.

### 1402. *Zethes obscurata.*

*Marmorina obscurata*, Butl., Ill. Typ. Lep. Het., p. 6
pl. lvii, fig. 11 (1879).

Described from Hakodate, I obtained specimens

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Nagasaki and in Satsuma in May, and others were taken at Hakodate in June by native collector.

There were four specimens, probably from Yokohama, in Pryer's collection. Alphéraky records the species from Corea.

*Habitat.* YESSO; JAPAN; KIUSHIU; COREA.

### 1403. *Zethes parvula*, sp. n.

Primaries brown tinged with lilacine-grey on the outer and inner marginal areas; there are indications of darker transverse markings but the most prominent is the almost erect medial line, the antemedial line is curved and the postmedial wavy, apparently originating at apex of a whitish triangle on the costa; a small white cloud at the apex. Secondaries lilacine powdered with brown on basal half, with brownish, waved, antemedial and medial lines, the latter followed by a dusky shade. Fringes crenulate, whitish chequered with brown and preceded by a brown line. Under surface brown suffused with lilacine-grey on primaries, especially on costal area, and on basal half of the secondaries; primaries have straight antemedial and angulated, double, postmedial dark lines; several wavy lines on the secondaries.

Expanse 23 millim.

One male specimen from Chang-yang, taken in July; there was a female in Pryer's collection.

*Distribution.* CENTRAL CHINA; JAPAN.

### 1404. *Zethes ornata*, sp. n.

Primaries purplish-brown becoming golden-brown on outer marginal area; antemedial line obscure, with white specks upon it, originating in a white, curved, linear mark on the costa; postmedial line blackish, oblique but slightly curved beyond the cell, edged on each side with whitish below a white costal triangle; central shade and sinuous submarginal line fuscous; a series of blackish points on the nervules before the outer margin. Secondaries brown; central shade and postmedial line as on the primaries. Under surface fuscous-grey; primaries have two dusky almost parallel transverse lines, the outer one preceded and followed by a whitish dot on the costa; secondaries have a blackish discal mark and an obscure, curved postmedial line.

Expanse 26 millim.

One male specimen from Ichang, taken in July.

*Habitat.* CENTRAL CHINA.

Resembles *Z. costinotata*, Butl., but distinguished from

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### 1405. *Zethes* (?) *costinotata.*

*Saraca costinotata*, Butl., Trans. Ent. Soc. Lond., 1881, p. 581.

Described from Yokohama. I took a specimen at Nagasaki in June, there was one example in Pryer's collection, and my native collector obtained one in Kiushiu.

*Habitat.* JAPAN and KIUSHIU.

### 1406. *Zethes pulcherrima.*

*Egnasia pulcherrima*, Butl, Ill. Typ. Lep. Het., iii, p. 67, pl. lvii, fig. 8 (1879).

*Zethes pulcherrima*, Hampson, Fauna Brit. Ind., Moths, iii, p. 10 (1895).

Described from Yokohama. There were several specimens in Pryer's collection. I obtained others at Nagasaki and at Gensan in June.

*Distribution.* SIMLA; NORTH CHINA (*Hampson*); COREA; JAPAN; KIUSHIU.

### 1407. *Zethes albicostalis.*

*Mestleta albicostalis*, Leech, Entom., xxii, p. 65, pl. ii, fig. 10 (1889).

I took one female specimen at Foochau in April, and my native collector obtained four examples, including both sexes, at Ningpo in June and July.

*Habitat.* EASTERN CHINA.

### 1408. *Zethes cinnamomea*, sp. n.

Cinnamon-brown with faint blackish transverse markings and whitish spots. Primaries have the basal area rather darker, limited by a blackish sub-basal line which merges into brown towards the inner margin; medial line blackish, dentate; postmedial line whitish, outwardly edged with brown, angled beyond the cell, a whitish mark upon it above the angle; submarginal line blackish, sinuous, with blackish specks upon it towards the inner margin; a marginal series of black points, reniform stigma brown, its inner edge blackish. Secondaries have a blackish discal lunule, a whitish

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postmedial line edged with brown, and a blackish interrupted submarginal line, the latter terminates in a black spot on abdominal margin and there is a black dot on the line just above the spot; marginal points as on primaries. Under surface pale whity-brown; all the wings have a blackish discal dot and three faint fuscous transverse lines; the outer margin of primaries is suffused with fuscous.

Expanse 30 millim.

One female specimen taken in June or July at Omei-shan.
*Habitat.* WESTERN CHINA.

### 1409. *Zethes corealis.*

*Hypena corealis*, Leech, Entom., xxii, p. 62, pl. ii, fig. 1 (1899).

I obtained one example of each sex at Gensan in July, and there were two specimens in Pryer's collection.
*Distribution.* JAPAN; COREA.

### 1410. *Zethes gensanalis.*

*Capnodes gensanalis*, Leech, Entom., xxii, p. 63, pl. ii, fig. 9 (1889).

The type of this species was taken by myself at Gensan in July.
*Habitat.* COREA.

### 1411. *Zethes sordidata*, sp. n.

Fuscous-grey. Primaries have two blackish transverse lines, the first is angled about the middle and the second obtusely angled beyond end of the cell; area between these lines suffused with fuscous-brown, there are indications of a darker medial line or shade; submarginal line greyish-white, rather wavy; stigmata indistinct. Secondaries have dark ante- and postmedial bands, and a blackish medial line. Under surface fuscous-brown suffused with fuscous on outer margin of primaries and costal area of the secondaries; primaries are greyish on costal and inner marginal areas, the stigmata are outlined in the same colour and there is a faint, almost straight, postmedial line; secondaries have a blackish discal dot ringed with greyish.

Expanse 38 millim.

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One male specimen from Wa-ssu-kow taken in June.
*Habitat.* WESTERN CHINA.

### 1412. *Zethes magna*, sp. n.

Primaries lilacine-grey irrorated and clouded with dark brown; sub-basal and antemedial lines dark velvety-brown, the first extending only from the costa to the subcostal nervure, the second diffuse and highly angled about the middle; postmedial line dark brown, broad and velvety towards the costa, outwardly elbowed beyond the cell thence inwardly oblique to the inner margin; reniform and orbicular stigmata tinged with ochreous, the former with a dark brown lunule upon it and placed in the angle of a dark velvety brown shade which extends from the costa to the angle of the antemedial line; the area beyond the postmedial line is paler, almost whitish towards costa, and is clouded with brown below the angle of the outer margin; submarginal line dark brown edged with whitish, wavy, outwardly oblique to vein 6 thence inwardly oblique to inner margin. Secondaries of the same ground-colour as the primaries but more heavily irrorated and suffused with brown; three dark brown transverse lines, the first bisects a large ochreous discal spot, the second is outwardly oblique from the costa to the cell where it curves inwards thence wavy to inner margin, the third is arched and double. Fringes darker than the ground-colour preceded by a dark brown line. Under surface fuscous-brown: primaries have the costal area whitish and a large dark velvety brown patch, inwardly edged with whitish, at the apex; stigmata whitish, the reniform with a fuscous lunule; a whitish patch at the base of the inner margin; postmedial line dark fuscous, nearly straight, edged outwardly with whitish: secondaries have a pale ochreous discal spot bisected by a brown bar and preceded by a dusky transverse shade; postmedial and submarginal lines dark fuscous outwardly edged with whitish.

Expanse ♂ 62 millim., ♀ 65 millim.

One male specimen from Moupin and one female from Ichang. June or July.
*Habitat.* CENTRAL and WESTERN CHINA.

### 1413. *Zethes musculus.*

*Zethes musculus*, Mén., Bull. Acad. Petr., iii, p. 110.

Pryer's specimens were from Yokohama and Oiwake, and I obtained examples at Gensan in July.
*Distribution.* AMURLAND; JAPAN; COREA.

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### 1414. *Zethes subfalcata.*

*Zethes subfalcata*, Mén., Schrenck's Amur. Reis., ii, p. 63, pl. v, fig. 5 (1889).

One female specimen taken in July at Chang-yang.
*Distribution.* AMURLAND; CENTRAL CHINA.

## Genus EGNASIA.

Hampson, Fauna Brit. Ind., Moths, iii, p. 15 (1895).

### 1415. *Egnasia amphidecta.*

*Marmorina amphidecta*, Butl., Ill. Typ. Lep. Het., iii, p. 69, pl. lvii, fig. 12 (1879).

Described from Yokohama; there were specimens in Pryer's collection and I obtained others at Tsuruga and Nagahama in July. Mr. Smith took the species at Hakodate in August.
*Habitat.* JAPAN and YESSO.

### 1416. *Egnasia manleyi*, sp. n.

Whitish powdered with brown. Primaries have three brown transverse lines, the antemedial is sinuous and the basal area limited by it is clouded with brown, the postmedial is double, sinuous, enclosing a brownish shade; the submarginal line is of the ground-colour, wavy, traversing a brown marginal border which tapers towards the inner margin; reniform and orbicular stigmata white outlined in brown, the former has a central black lunule and the latter a central black point. Secondaries have a blackish discal lunule and three indistinct, brown transverse lines; the outer marginal area is brown and is traversed by a wavy whitish submarginal line. Under surface whitish; primaries clouded with brown on outer area, there are three transverse lines on the medial area but these are only distinct towards the costa; secondaries have double medial and postmedial lines, and there are discal markings on all the wings as on the upper surface.

Expanse 34–36 millim.

Five female specimens received from Mr. Manley of Yokohama.
*Habitat.* JAPAN.

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### Genus CAPNODES.

Guen.; Hampson, Fauna Brit. Ind., Moths, iii, p. 20 (1895).

#### 1417. *Capnodes cinerea.*

*Capnodes cinerea*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 294 (1878); Ill. Typ. Lep. Het., ii, p. 44, pl. xxxiv, fig. 9 (1878).

One example from Hakodate, taken by my native collector in June. Butler's type was from Yokohama.

*Distribution.* JAPAN; YESSO; AMURLAND.

### Genus DIOMEA.

Walk., Cat. Lep. Het., xiii, p. 1109 (1857).

#### 1418. *Diomea cremata.*

*Capnodes cremata*, Butl., Ann. and Mag. Nat. Hist., (5) i, p. 295 (1878); Ill. Typ. Lep. Het., ii, p. 44, pl. xxxiv, fig. 10 (1878).

*Diomea cremata*, Hampson, Fauna Brit. Ind., Moths, iii, p. 23 (1895).

Described from Yokohama.

I obtained specimens at Gensan in July and at Hakodate in August.

*Distribution.* DHARMSÁLA; SIMLA; KHÁSIS (*Hampson*); JAPAN; YESSO; COREA; EASTERN CHINA; AMURLAND.

#### 1419. *Diomea fabularis.*

*Capnodes fabularis*, Swinh., Trans. Ent. Soc. Lond., 1890, p. 257.

*Diomea fabularis*, Hampson, Fauna Brit. Ind., Moths, iii, p. 23 (1895).

My collectors did not meet with this species, the type of which was from North China.

*Distribution.* NORTH CHINA; RANGOON (*Hampson*).

### Genus RAPARNA.

Moore; Hampson, Fauna Brit. Ind., Moths, iii, p. 24 (1895).

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### 1420. *Raparna erebina.*

*Eynasia erebina*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 450 (1879).
*Raparna imparata*, Hampson, Fauna Brit. Ind., Moths, iii, p. 26 (1895).

Described from Yokohama.
*Habitat.* JAPAN.

### 1421. *Raparna transversa.*

*Raparna transversa*, Moore, Lep. Atk., ii, p. 178 (1882).
*Raparna ochreipennis*, Hampson, Fauna Brit. Ind., Moths, iii, p. 25 (1895).

Specimens were obtained by myself at Nagasaki in May, by native collector at Gensan in July, and also in the island of Kiushiu. I have received examples from Moupin and from Chang-yang, taken in June and July.
*Distribution.* NORTH-WEST HIMALAYAS; CENTRAL and WESTERN CHINA; COREA; KIUSHIU.

### 1422. *Raparna ferrilineata.*

*Raparna ferrilineata*, Hampson, Journ. Bomb. Nat. Hist. Soc., xi, p. 461 (1897).

One specimen from Chang-yang and one from Kiukiang, the latter taken in July and the other in June.
*Distribution.* KHÁSIS (*Hampson*); CENTRAL CHINA.

## Genus DIERNA.

Walk.; Hampson, Fauna Brit. Ind., Moths, iii, p. 29 (1895).

### 1423. *Dierna strigata.*

*Phurys strigata*, Moore, Proc. Zool. Soc. Lond., 1867, p. 80.
*Dierna multistrigaria*, Moore, Lep. Atk., ii, p. 173 (1882).
*Dierna strigata*, Hampson, Fauna Brit. Ind., Moths, iii, p. 30 (1895).

I have two male specimens which were taken at Ship-y-shan in September and one female from the province of Kwei-chow.
*Distribution.* KHÁSIS; BOMBAY; NILGIRIS (*Hampson*); CENTRAL and WESTERN CHINA

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*Dierna timandra*, Alph., Rom. sur Lép., ix, p. 179, pl. xi, fig. 7 (1897).

Alphéraky describes this species from Corea.

### Subfamily *DELTOIDINÆ*.

### Genus SIMPLICIA.

Guen.; Hampson, Fauna Brit. Ind., Moths, iii, p. 35 (1895).

#### 1425. *Simplicia rectalis.*

*Herminia rectalis*, Eversm., Bull. Mosc., 1842, iii, p. 558; Herr.-Schäff., fig. 606.

*Simplicia rectalis*, Guen., Delt., p. 52 (1854); Leech, Proc. Zool. Soc. Lond., 1889, p. 564.

*Herminia sicca*, Butl., Ill. Typ. Lep. Het., iii, p. 62, pl. lvi, fig. 7 (1879).

There were specimens, probably from Yokohama, in Pryer's collection. I took the species at Nagasaki in June and at Gensan in July. Examples were also received from Chang-yang, Kiukiang and several localities in Western China.

Chinese specimens are generally larger than those from either Japan or Europe. *Sicca*, Butler, is slightly darker than the typical form.

*Distribution.* EUROPE.—JAPAN; KIUSHIU; COREA; AMURLAND; CENTRAL and WESTERN CHINA.

#### 1426. *Simplicia niphona.*

*Bocana niphona*, Butl., Ill. Typ. Lep. Het., ii, p. 56, pl. xxxviii, fig. 9 (1878).

*Simplicia niphona*, Hampson, Fauna Brit. Ind., Moths, iii, p. 36 (1895).

Described from Yokohama; there were three examples from this locality in Pryer's collection. I received one specimen of each sex from Kiukiang, a female from Chow-pin-sa, and one from Chia-kou-ho. Occurs in May and June.

*Distribution.* NORTH-WEST HIMALAYAS; SIKHIM (*Hampson*); JAPAN; CENTRAL and WESTERN CHINA.

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### 1427. *Simplicia prætextata*, sp. n.

Antennæ of male knotted and contorted. Primaries brown suffused with fuscous, area beyond the straight submarginal line pale brown; ante- and postmedial lines blackish, sinuous, obscure, the first with an indentation before the inner margin; a blackish mark at outer end of the cell. Secondaries grey-brown suffused with fuscous except in the area beyond the pale submarginal line which terminates at anal angle; a blackish discal dot. Under surface pale brown, powdered and suffused with fuscous; all the wings have a black discal dot, and indications of one, sometimes two, dark transverse lines beyond.

Expanse 40–42 millim.

One male specimen from Wa-ssu-kow, one from Ni-tou, and a female from Moupin. June and July.

*Habitat.* WESTERN CHINA.

Allied to *S. niphona*, Butl., but at once distinguished from that species by the pale outer margin of all the wings in which character it resembles *S. schaldusalis*, Walk. = *marginata*, Moore.

## Genus ADRAPSA.

Walk.; Hampson, Fauna Brit. Ind., Moths, iii, p. 36 (1895).

### 1428. *Adrapsa albirenalis.*

*Herminia albirenalis*, Moore, Proc. Zool. Soc. Lond., 1867, p. 85.

*Adrapsa albirenalis*, Hampson, Fauna Brit. Ind., Moths, iii, p. 39 (1895).

One example taken at Chow-pin-sa in May or June.

*Distribution.* SIKHIM (*Hampson*); WESTERN CHINA.

### 1429. *Adrapsa simplex.*

*Egnasia simplex*, Butl., Ill. Typ. Lep. Het., iii, p. 66, pl. lvi, fig. 5 (1879).

The species was described from Yokohama. I took specimens in Satsuma in May, at Nagasaki in June, and at Tsuruga in July. I have also received specimens from Kiushiu, Kiukiang, and Chow-pin-sa.

*Distribution.* JAPAN; KIUSHIU; CENTRAL and WESTERN CHINA.



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blackish. Fringes preceded by an interrupted blackish line. Under surface pale whitish-brown suffused with fuscous on basal two-thirds; all the wings have a fuscous submarginal band and the secondaries have a blackish discal dot.

Expanse 36 millim.

One male specimen taken at Kiukiang in June.
*Habitat.* CENTRAL CHINA.

### 1433. *Adrapsa* (?) *rivulata*, sp. n.

Antennæ finely ciliated. Fuliginous-brown; all the wings have whitish, wavy, postmedial and submarginal lines and patches of greyish scales on the outer marginal areas. Primaries have a whitish, wavy, antemedial line, a blackish medial shade, and some greyish scales on the costal and medial areas; the reniform stigma is represented by a white spot and the orbicular by a minute white dot. Secondaries have some greyish scales following the postmedial line. Under surface similar to above but the lines are more clearly defined, the primaries are marked with whitish on the outer marginal area, and there is a white discal mark on the secondaries.

Expanse 38 millim.

One male specimen taken at Omei-shan in June or July.
*Habitat.* WESTERN CHINA.

### 1434. *Adrapsa* (?) *incertalis*, sp. n.

Brown, darker on the outer-marginal areas of all the wings. Primaries have a white dot in, and white bar at the end of the cell; ante- and postmedial lines blackish, wavy, the latter edged with a paler shade of the ground-colour; submarginal line represented by a series of pale dots; there is a blackish central shade partly enclosing the white discal bar; the central shade, postmedial and submarginal lines of secondaries appear to be continuations of those on the primaries. Under surface ochreous-brown, outer marginal areas dark brown with an almost square patch of the ground-colour at the apex of the primaries; all the wings have a white discal dot, a dark central shade and wavy postmedial line, and a pale wavy submarginal line. Antennæ ciliated, not contorted.

Expanse 52 millim.

One male specimen from Omei-shan, taken in June or July.
*Habitat.* WESTERN CHINA.

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that on the primaries is oblique from the tip of the wing to inner margin; the pale reniform stigma is absent.

Expanse 26 millim.

One male specimen from Kiukiang taken in July.

*Habitat.* CENTRAL CHINA.

1439. *Pseudaglossa albomaculata*, sp. n.

Dark fuscous with blackish transverse lines which are partly edged with white. Primaries have three lines; the antemedial is wavy, the postmedial is outwardly oblique to beyond the cell where it is excurved, thence sinuous to inner margin; submarginal sinuous, indented below the costa and above the inner margin; the reniform stigma has its inner edge outlined in white and there is a fuscous shade below it extending to the inner margin, orbicular stigma represented by a white speck. Secondaries have three lines; the outer two edged with white, the antemedial is very slightly curved, the postmedial is wavy above the middle and oblique to the abdominal margin, the submarginal is sinuous with a sharp dentation before its termination at the anal angle. Fringes preceded by ochreous and black lines, the black line on primaries interrupted between the nervules. Under surface fuliginous: primaries have a darker medial band, enclosing a whitish discal mark, outwardly edged with white towards the costa; submarginal line white originating in a white spot below the costa, indented before the middle thence excurved to the inner margin inwardly bordered with dark fuliginous; neuration between medial band and submarginal line whitish: secondaries have a slightly curved blackish medial band, outwardly edged with white, and a white curved submarginal line, inwardly shaded with dark fuliginous, indented before the angle where it terminates.

Expanse 38 millim.

Eleven specimens, including three females, from Omei-shan, and one male from the province of Kwei-chow.

*Habitat.* WESTERN CHINA.

Allied to *P. curvipalpis*, Butl.

1440. *Pseudaglossa annulata*, sp. n.

Fuscous-grey. Primaries have blackish ante- and postmedial lines both commencing in fuliginous-brown spots on the costa, the first is indented, the second wavy, curved and recurved; there is a fuliginous-brown central shade, the reniform stigma is of the ground-colour outlined in blackish and the orbicular is blackish and punctiform;

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submarginal line whitish, serrate and indented, inwardly bordered with fuliginous-brown. Secondaries have a fuliginous-brown discal mark and transverse shade, an undulated central line, and a whitish wavy submarginal line which is bordered with fuliginous-brown. Fringes fuliginous-brown preceded by a line of the ground-colour, all the wings have a marginal series of blackish spots. Under surface fuscous, paler towards the base; all the wings have a whitish discal mark and dusky central line.

Expanse 40 millim.

One male specimen from Ta-chien-lu, and two females from Wa-ssu-kow. June.

*Habitat.* WESTERN CHINA.

### Genus TROTOSEMA.

Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 449 (1879).

#### 1441. *Trotosema sordidum.*

*Trotosema sordidum*, Butl., Ann. and Nat. Hist., (5) iv, p. 449 (1879).

Described from Yokohama.

### Genus MESOPLECTRA.

Butler, Ill. Typ. Lep. Het., viii, p. 65 (1879).

#### 1442. *Mesoplectra lilacina.*

*Mesoplectra lilacina*, Butl., Ill. Typ. Lep. Het., iii, p. 65, pl. lvii, fig. 3 (1879).

Described from Yokohama. There was one example in Pryer's collection, and I have received a specimen from Mr. Manley of Yokohama.

*Habitat.* JAPAN.

#### 1443. *Mesoplectra* (?) *hampsoni*, sp. n.

Primaries grey finely powdered with brown; antemedial line fuscous-brown, outwardly oblique from costa to the cell, thence wavy direct to the inner margin; postmedial line, fuscous-brown, serrate, slightly incurved below the costa, inwardly shaded with warm brown and outwardly edged with whitish; submarginal line whitish, wavy, interrupted, with some blackish dots and saggitate marks upon it, an irregular blackish patch before it on the costa; the apical area

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beyond the postmedial line and the outer margin much less powdered with brown; marginal line blackish, lunulate; discal lunule blackish. Secondaries fuscous-grey with a dark-edged whitish curved submarginal line. Fringes brown chequered with whitish and preceded by a brown line. Under surface of primaries pale cupreous-brown, whitish-grey on the costa and at apex; there is a fuscous postmedial line, excurved beyond the cell; submarginal line formed of whitish dots edged with blackish towards the costa: secondaries greyish suffused and powdered with brown, a darker discal mark and two dentate transverse lines, the outer line outwardly edged with whitish, the dentations between veins 5 and 6 most pronounced.

Expanse 40 millim.

Two males from Omei-shan. Taken in June or July.
*Habitat.* WESTERN CHINA.

## Genus BLEPTINA.

Guen.; Hampson, Fauna Brit. Ind., Moths, iii, p. 41 (1895).

### 1444. *Bleptina albovenata*, sp. n.

Primaries fuliginous-brown with white markings; ante- and postmedial lines oblique, the latter sometimes slightly excurved about the middle; median nervure and branches to just beyond the postmedial line, and also the discocellulars, white; reniform stigma indicated by two black dots; orbicular stigma black surrounded with whitish; submarginal line whitish but indistinct as a rule. Secondaries fuscous with an incomplete postmedial line and indications of a pale submarginal line. Under surface: primaries fuscous, darker on the outer marginal area; an obscure discal dot and postmedial line; secondaries whitish powdered with brownish on the basal two-thirds, outer third fuscous-brown; discal spot black with a dot of the same colour before it; beyond these there are two obscure, wavy, transverse lines, each terminating in a dark spot before the abdominal margin.

Expanse 34 millim.

Fourteen specimens, including both sexes, from Chia-kou-ho, one example each from Moupin, Ni-tou, and Wa-shan.
*Habitat.* WESTERN CHINA.

### 1445. *Bleptina proxima*, sp. n.

Primaries fuscous-brown; ante- and postmedial lines paler; stigmata blackish but obscure; submarginal line only distinct towards

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the costa. Secondaries fuscous-brown, with a pale, curved, postmedial line, submarginal line pale, wavy, inwardly edged with brown. All the wings have a dark-edged pale marginal line. Under surface similar to above, but there is an obscure, dingy mark at the end of the cell.

Expanse 36 millim.

Two male specimens from Ta-chien-lu, one taken in May or June, the other in July or August.

*Habitat.* WESTERN CHINA.

This species differs from *B. albovenata* in being paler in colour, the median nervure and the edge of the reniform stigma are not white, the ante- and postmedial lines are both curved, the submarginal line on all the wings is more deeply sinuous, and the pale lines on the under surface are more clearly defined.

### 1446. *Bleptina ambigua*, sp. n.

Primaries fuliginous-brown; ante- and postmedial lines white, both slightly excurved about the middle; median nervure, and branches to just beyond the postmedial line, whitish; discocellulars white; submarginal line whitish, sinuous and wavy; marginal line black, interrupted at the ends of the nervules with whitish. Secondaries fuscous with pale postmedial and submarginal line both marked with white towards the abdominal margin. Under surface fuscous; primaries have pale, wavy, interrupted, postmedial and submarginal lines, but the latter is very obscure; secondaries have a black discal lunular mark and two pale transverse lines beyond, the innermost of these last is somewhat obscure and is internally bordered with blackish.

Expanse 45 millim.

One female specimen taken in June or July.

*Habitat.* WESTERN CHINA.

Nearest allied to *B. proxima* from which species it differs in being larger, the median nervure and branches are whitish as in *B. albovenata*, the stigmata are indistinct, and the postmedial line is placed farther from the end of the cell than in either *B. proxima* or *B. albovenata*.

### 1447. *Bleptina tripartita*, sp. n.

Primaries with the basal and outer thirds chocolate-brown, the central third ochreous suffused with brownish and traversed by two darker wavy lines; the basal third is limited by a bright ochreous

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line which is excurved below the costa, and the outer third is limited internally by a bright ochreous line which is oblique and slightly indented below the costa; submarginal line wavy, most distinct towards the costa, the area beyond is greyish; a marginal series of black dots. Secondaries fuscous with two darker, white-edged, transverse lines, the costal area is suffused with whitish; fringes preceded by an interrupted blackish line. Under surface greyish: primaries clouded with brownish on the costal area; postmedial line dusky edged with ochreous towards the costa and with an ochreous patch before it in the cell; submarginal line obscure, dusky, edged with ochreous towards the costa; secondaries have a blackish discal mark and two wavy transverse lines.

Expanse 34 millim.

One male and two female specimens from Wa-shan, three female examples from Chia-kou-ho. July.

*Habitat.* WESTERN CHINA.

### 1448. *Bleptina curvilinea*, sp. n.

Primaries with the basal and outer thirds dark brown, the central third greyish-brown suffused on the medial area with fuscous; the basal third is limited by a pale ochreous curved line and the outer third is limited internally by a pale ochreous line which is slightly excurved beyond the cell; reniform stigma, blackish, narrow, outwardly bordered with whitish; orbicular black, punctiform; submarginal line sinuous, obscure, commencing in an elongate whitish spot on the costa, the area beyond greyish. Secondaries dark brown the area within the whitish postmedial line rather paler; the submarginal line is wavy but only clearly defined towards the abdominal margin. Under surface fuscous-brown; primaries have two pale ochreous spots on the costa at the extremities of the postmedial and submarginal lines, between these spots there is a large dark brown triangle and a small one beyond the outer spot; the secondaries have dark ante- and postmedial bands.

Expanse 36 millim.

Four specimens from Chang-yang, five from Wa-shan, and four from Chia-kou-ho. Both sexes are included in the series. Occurs from May to August.

*Habitat.* CENTRAL and WESTERN CHINA.

Allied to *B. tripartita* but darker; the ante- and postmedial lines are curved, and there is a pale spot at the costal extremity of the submarginal line.

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### 1449. *Bleptina spacoalis.*

*Bleptina spacoalis*, Walk., Cat. Lep. Het., xix, p. 872 (1859).

I obtained this species at Tsuruga in July and at Hakodate in August, others were taken at Gensan and Ningpo and in Kiushiu in July by native collector. There were some examples in Pryer's collection, probably from Yokohama, and I have also received specimens from Moupin.

*Distribution.* JAPAN; YESSO; KIUSHIU; COREA; EASTERN and WESTERN CHINA.

### 1450. *Bleptina descripta*, sp. n.

Primaries brown; ante-marginal line pale ochreous nearly straight, postmedial line pale ochreous obtusely angled above the middle; outer edge of the reniform stigma pale ochreous; orbicular stigma black, punctiform; submarginal line whitish, wavy, interrupted, most distinct towards the costa; a series of black dots on the outer margin. Secondaries greyish-brown with whitish postmedial and submarginal lines, both are indistinct towards the costa and the former is edged internally by an interrupted blackish line; a series of black lunules on the outer margin. Under surface greyish; primaries clouded with brownish on the costal area, postmedial line dusky, edged with ochreous towards the costa as also is the obscure submarginal line; secondaries have a rather large blackish discal mark and two wavy transverse lines.

Expanse 32 millim.

One male specimen from Chang-yang, taken in June.

*Habitat.* CENTRAL CHINA.

### 1451. *Bleptina sinuosa*, sp. n.

Primaries ochreous with dark brown basal patch and outer marginal border, the outer edge of the former is rather curved and the inner edge of the latter is crenulate and incurved below the middle; submarginal line ochreous, crenulate; reniform and orbicular stigmata outlined in blackish but they are not distinct. Secondaries brown with two crenulate ochreous lines, the outer most distinct but neither extending to the costa. Under surface: primaries fuscous with an obscure discal mark and transverse line beyond; submarginal line traceable towards the costa as a short ochreous line preceded by a dark triangular patch: secondaries whity-brown irrorated with dark brown; there is a blackish discal mark on a

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dusky transverse shade and two contiguous crenulated blackish post-medial lines.

Expanse 32 millim.

Two males and a female from Chang-yang, one male from Ichang and a female from Omei-shan. June and July.

*Habitat.* CENTRAL and WESTERN CHINA.

### 1452. *Bleptina propugnata*, sp. n.

Primaries yellowish with purplish-brown basal patch and outer marginal border; the outer edge of the former is straight and the inner edge of the latter is sinuous towards the costa and strongly indented about the middle; the orbicular stigma is punctiform, the reniform is represented by a colon-like mark and there is a transverse dusky shade between the stigmata; the marginal border is traversed by an obscure pale, wavy line, and there is a marginal series of black dots. Secondaries whitish with two rather broad fuscous transverse bands, the basal and outer areas are also suffused with fuscous; the fuscous-grey fringes are preceded by an interrupted black line. Under surface: primaries fuscous-brown with an obscure, blackish, discal mark and postmedial line; a short pale line from the costa before the apex: secondaries whitish suffused with fuscous-brown on the costal and outer areas; discal mark and two transverse lines beyond, blackish.

Expanse 35 millim.

One female specimen from Wa-shan taken in June.

*Habitat.* WESTERN CHINA.

Allied to *B. latifasciata*, Hampson, from India.

### 1453. *Bleptina abjudicalis.*

*Bertula abjudicalis*, Walk., Cat. Lep. Het., xvi, p. 163 (1858).
*Bleptina abjudicalis*, Hampson, Fauna Brit. Ind., Moths, iii, p. 44 (1895).

One example of each sex from Omei-shan, taken in June or July.

The ochreous-brown between the ante- and postmedial lines is broader than in Indian examples of this species and in the male specimen the lunule is obscured.

*Distribution.* NILGIRIS; CEYLON (*Hampson*); WESTERN CHINA.

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### 1454. *Bleptina nigristigma*, sp. n.

Primaries brown brighter on basal two-thirds; antemedial and postmedial lines double, dark brown, the latter incurved below the cell and outwardly edged with blackish; reniform stigma black, orbicular punctiform; submarginal line brownish, wavy, edged and marked with whitish, most distinct towards costa. Secondaries fuscous-grey with two pale transverse lines, the outer one of which is most distinct. Under surface of primaries fuscous-brown, of secondaries whitish suffused with fuscous on the costal and outer areas; all the wings have a darker discal mark and two transverse lines beyond.

Expanse 30–33 millim.

One male and two female specimens from Wa-shan; one female example from each of the following localities—Ichang, Chang-yang, and Chow-pin-sa. June and July.

*Habitat.* CENTRAL and WESTERN CHINA.

Allied to *B. hadenalis*, Moore.

### 1455. *Bleptina jutalis.*

*Bocana jutalis*, Walk., Cat. Lep. Het., xvi, p. 172 (1858).
*Bocana incongruens*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 448.
*Bleptina jutalis*, Hampson, Fauna Brit. Ind., Moths, iii, p. 45 (1895).
*Nodaria* (?) *amurensis*, Staud., Stett. Ent. Zeit., 1888, p. 274; Rom. sur Lép., vi, p. 609, pl. xiii, fig. 1 (1892).

I obtained an example at Gensan in July and there was one from Yokohama in Pryer's collection. One male specimen was received from Chang-yang and a female example from Pu-tsu-fong, both taken in July.

*Distribution.* CEYLON; RANGOON (*Hampson*); AMURLAND; JAPAN; COREA; CENTRAL and WESTERN CHINA.

### 1456. *Bleptina venata*, sp. n.

Primaries light brown; the venation including the discocellulars ochreous-brown; ante- and postmedial lines ochreous-brown, erect, the former angled below the costa; submarginal line pale, sinuous, wavy; a pale brown line on outer margin of all the wings. Secondaries fuscous with a pale postmedial line and obscure, wavy, submarginal line. Under surface fuscous; all the wings have a discal mark and a pale postmedial line, the secondaries have an indistinct

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submarginal line in addition. Antennæ have paired bristles at each joint.

Expanse 36 millim.

One male specimen from Omei-shan, taken in June or July.

*Habitat.* WESTERN CHINA.

### 1457. *Bleptina rectilinea*, sp. n.

Brown with a slight purplish reflection. Primaries have whitish ante- and postmedial lines, these are almost straight and both are edged with dark brown; reniform stigma whitish with obscure dark-brown outline; pale submarginal line, wavy, angulated before the inner margin and again towards the costa; a series of black lunules on the outer margin. Secondaries have a whitish postmedial line and pale, wavy, submarginal line; black lunules on outer margin as on primaries. Under surface fuscous-brown: primaries have a blackish discal mark preceded by a smaller dot and dusky curved postmedial line, the latter has a pale outer border; submarginal line pale, wavy, but indistinct; secondaries have a black discal mark and pale edged, dusky, wavy, postmedial and submarginal lines.

Expanse 40 millim.

Two examples of each sex from Ichang, two male specimens and one female from Chia-kou-ho, and one female from Wa-shan. May, June, and July.

*Habitat.* CENTRAL and WESTERN CHINA.

### 1458. *Bleptina bistrigata.*

*Zanclognatha* (?) *bistrigata*, Staud., Stett. Ent. Zeit., 1888, p. 236; Rom. sur. Lép., vi, p. 618, pl. xiii, fig. 4 (1892).

A male specimen and one female in Pryer's collection appear to be referable to this species.

*Distribution.* AMURLAND; JAPAN.

### 1459. *Bleptina contigua*, sp. n.

Pale brown tinged with greyish. Primaries have a pale ochreous spot at end of the cell; ante- and postmedial lines fuscous, the first wavy, the second gently curved beyond the cell and slightly waved; submarginal line pale, wavy, inwardly shaded with dusky. Secondaries have an oblique, fuscous, medial line and an obscure curved, pale, submarginal line. Fringes preceded by two lines, one blackish the other pale. Under surface pale brown, all the wings

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have a fuscous discal mark and transverse line beyond; there are traces of a dusky submarginal line.

Expanse 26 millim.

Two male specimens from Chang-yang, one taken in July and the other in August.

*Habitat.* CENTRAL CHINA.

Allied to *B. ningpoalis* but separable by its smaller size, lighter colour, and the antemedial line of secondaries is oblique and not curved.

### 1460. *Bleptina ningpoalis.*

*Herminia ningpoalis*, Leech, Entom., xxii, p. 64, pl. ii, fig. 7 (1889).

Five specimens taken by native collector in the Snowy Valley, near Ningpo, in July. I have also three examples from Chang-yang.

*Habitat.* EASTERN and CENTRAL CHINA.

### 1461. *Bleptina parallela*, sp. n.

Pale brown powdered with fuscous-brown. Primaries have parallel ante- and postmedial lines, these are clear pale brown outwardly edged with dark brown; the area beyond postmedial line darker brown with a blackish cloud about the middle and a smaller one between it and the costa, these clouds are not always distinct; submarginal line pale, sinuous, edged with blackish, obscure; reniform represented by two black dots and a pale line. Secondaries have a clear pale brown postmedial line with fuscous-brown edge, area beyond fuscous-brown, wavy, edged with blackish; a series of black marginal dots on all the wings. Under surface pale brown, primaries suffused with fuscous, secondaries powdered with fuscous; all the wings have a black discal dot, a fuscous postmedial line, and a pale, wavy, submarginal line, the latter is broadly bordered on each side with fuscous.

Expanse 40 millim.

Two male specimens and five females from Omei-shan, two females from Moupin, two others from Wa-shan and one from Chia-kou-ho, one male example from Foochau.

*Habitat.* NORTHERN and WESTERN CHINA.

Transverse lines similar to those of *B. trilinealis*, Brem., but the species is larger in size.

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### 1462. *Bleptina trilinealis.*

*Herminia trilinealis*, Brem., Lep. Ost.-Sib., p. 64, pl. v, fig. 2 (1864).
*Zanclognatha trilinealis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 561.

I obtained this species in Satsuma in May, and at Nagasaki in June. There were specimens in Pryer's collection, and I have received one example from Chang-yang and one from Chow-pin-sa.

*Distribution.* AMURLAND; JAPAN; KIUSHIU; CENTRAL and WESTERN CHINA.

### 1463. *Bleptina albolinealis*, sp. n.

Primaries ochreous-brown with three whitish oblique stripes bordering the black transverse lines; antemedial line very oblique, indistinct towards the costa: postmedial and submarginal lines oblique, diverging towards the inner margin. Secondaries pale whitish-brown tinged with fuscous-brown on basal area and with a broad brown band on outer area; discal dot blackish. Fringes preceded by an interrupted black line. Under surface pale whitish-brown suffused with fuscous-brown on the discal area; all the wings have a blackish discal dot and a broad brownish submarginal band.

Expanse 34–38 millim.

Six examples, including both sexes, from Kiukiang. Taken in July.

*Habitat.* CENTRAL CHINA.

### 1464. *Bleptina* (?) *vestitalis*, sp. n.

Pale reddish-brown, whitish along basal two-thirds of primaries and at the base of the secondaries. Primaries have a black antemedial line, outwardly angled at the middle; a bidentate, broad, black medial line, and a wavy white edged black postmedial line, the latter is excurved beyond the cell and dentate towards the inner margin; submarginal whitish, wavy, but indistinct; a black dot on the costa, between the ante- and medial lines, and a black dot at costal end of the postmedial line; reniform stigma whitish enclosing a blackish lunule, orbicular black, punctiform. Secondaries have a broad black antemedial line and a white-edged, sinuous, black postmedial line. Fringes preceded by a wavy black line. Under surface pale brown powdered with fuscous; all the wings have a black

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discal dot and two transverse lines, the first line broad; there is a dusky band on the outer marginal area.

Expanse 25–28 millim.

Two male specimens from Moupin, one taken in June the other in July.

*Habitat.* WESTERN CHINA.

### 1465. *Bleptina petrina.*

*Bleptina petrina*, Butl., Ill. Typ. Lep. Het., iii, p. 64, pl. lvi, fig. 13 (1879).

Described from Yokohama.

*Habitat.* JAPAN.

## Genus EDESSENA.

Walker, Cat. Lep. Het., xvi, p. 162 (1858).

### 1466. *Edessena hamada.*

*Renodes hamada*, Feld., Reis. Nov., pl. cxix, fig. 23 (1874).
*Edessena hamada*, Leech, Proc. Zool. Soc. Lond., 1889, p. 564.

There were specimens from Yokohama in Pryer's collection, and I have others from Mr. Manley which were taken in the same district. I obtained some examples in Satsuma in May and have received the species from Ichang, Ta-chien-lu, Omei-shan, Pu-tsu-fong, Chia-kou-ho, and Chow-pin-sa. Occurs in June and July.

Two males and one female from Satsuma and one female from Ichang have the large discal spot of *E. gentiusalis*, Walk., the type of which was from "North China."

*Distribution.* CENTRAL and WESTERN CHINA; JAPAN.

### 1467. *Edessena gentiusalis.*

*Edessena gentiusalis*, Walk., Cat. Lep. Het., xvi, p. 162 (1858).

The type of this species was from "North China" probably from Ningpo. Possibly it is not specifically distinct from *E. hamada.*

*Habitat.* NORTH CHINA.

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## Genus MASTIGOPHORUS.

Poey; Hampson, Fauna Brit. Ind., Moths, iii, p. 47 (1895).

### 1468. *Mastigophorus gladiata.*

*Cidariplura gladiata*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 449 (1879).

Described from Yokohama. I obtained specimens at Fushiki in July and my native collector in Kiushiu; I have also received examples from Ichang and one from Omei-shan, the latter is rather larger than the others in the series.

*Distribution.* JAPAN; KIUSHIU; CENTRAL and WESTERN CHINA.

### 1469. *Mastigophorus ochreistigma*, sp. n.

Antennæ ciliated with paired bristles at each joint. Primaries brown; ante- and postmedial lines ochreous edged with dark brown, the former wavy and oblique, the latter obtusely angled beyond the cell; submarginal line ochreous, interrupted; reniform and orbicular stigmata ochreous. Secondaries rather paler than the primaries with a dark brown edged ochreous postmedial line and interrupted submarginal line.

Expanse 40–43 millim.

A long series from Ichang, four specimens from Kiukiang, and one from Chang-yang. June and July.

*Habitat.* CENTRAL CHINA.

Very closely allied to *M. gladiata*, Butl., but separable from that species by the larger, ochreous, reniform stigma.

### 1470. *Mastigophorus modesta*, sp. n.

Differs from *M. ochreistigma* in having a blackish reniform stigma with pale outline; the antemedial line is more oblique, not wavy, and terminates on the inner margin nearer the postmedial line.

Expanse 42 millim.

One male specimen from Moupin taken in June.

*Habitat.* WESTERN CHINA.

### 1471. *Mastigophorus butleri*, sp. n.

Antennæ ciliated with paired bristles at each joint; front tibiæ chestnut-brown. Primaries purplish brown; ante- and postmedial



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about the middle, the latter slightly curved towards inner margin and inwardly edged with paler; submarginal line dark brown edged with paler, sinuous; reniform dark brown outlined with paler. Secondaries brown with postmedial and submarginal lines as on primaries, but the latter less distinct; there is also a lunular discal mark. Under surface fuscous; primaries have an annular discal mark; secondaries have a discal lunule and two transverse lines.

Expanse 46 millim.

One male specimen from Chia-kou-ho and one example of the same sex from Wa-shan. June and July.

*Habitat.* WESTERN CHINA.

### 1472. *Mastigophorus signata.*

*Gisira signata*, Butl., Ill. Typ. Lep. Het., iii, p. 61, pl. lvi, fig. 4 (1879).

Described from Yokohama. I obtained a male specimen at Gensan in July, there were two examples of the same sex in Pryer's collection, and I have received one from Kiukiang. A female specimen was received from Chang-yang. Occurs in June and July.

*Distribution.* JAPAN; COREA; CENTRAL CHINA.

### 1473. *Mastigophorus nigristigmata*, sp. n.

Fuscous-brown powdered with darker and with fuliginous transverse shades. Primaries have short sub-basal, wavy antemedial, and curved and recurved postmedial black lines, second and third edged outwardly and the first edged inwardly with whitish; reniform and orbicular velvety black, outlined in whitish; submarginal line whitish, undulated, this line and also the postmedial are inwardly bordered with fuliginous. Secondaries have a gently undulated black medial line, and a whitish interrupted submarginal line, both are inwardly bordered with fuliginous and the medial line is outwardly edged with whitish. Fringes of the ground-colour, paler at their base and preceded by a black line. Under surface pale brown powdered with darker; all the wings have a black discal mark, blackish postmedial line edged outwardly with yellowish, and a submarginal wavy line of the ground-colour and inwardly bordered with fuliginous; the primaries have a second black spot in the cell corresponding to the orbicular of the upper surface.

Expanse 40 millim.

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One female specimen taken in June or July at Omei-shan.

*Habitat.* WESTERN CHINA.

### Genus FALCIMALA.

Hampson, Fauna Brit. Ind., Moths, p. 51 (1895).

#### 1474. *Falcimala japonica.*

*Olybama japonica,* Butl., Trans. Ent. Soc. Lond., 1881, p. 583.

Described from Tokio.

*Habitat.* JAPAN.

### Genus HYDRILLODES.

Guenée, Delt. et Pyral., p. 65 (1854).

#### 1475. *Hydrillodes lentalis.*

*Hydrillodes lentalis,* Guen., Delt., p. 66 (1854); Leech, Proc. Zool. Soc. Lond., 1889, p. 565; Hampson, Fauna Brit. Ind., Moths, iii, p. 53 (1895).

*Bleptina morosa,* Butl., Ill. Typ. Lep. Het., iii, p. 64, pl. lvi, fig. 15 (1879).

*Bleptina dimissalis,* Walk., Cat. Lep. Het. Suppl., iv, p. 1162 (1865); Butl., Trans. Ent. Soc. Lond., 1881, p. 580.

I obtained this species at several places in Japan; my native collector took specimens at Gensan and also in the island of Kiushiu. I have received examples from Hakodate and Chang-yang. It appears to be on the wing from May to September.

*Distribution.* SOUTH AFRICA.—Throughout INDIA, CEYLON, and BURMA; ANDAMANS; BORNEO; CELEBES; AUSTRALIA (*Hampson*); JAPAN; YESSO; KIUSHIU; COREA; AMURLAND; CENTRAL CHINA.

### Genus NODARIA.

Guen.; Hampson, Fauna Brit. Ind., Moths., iii, p. 56 (1895).

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### 1476. *Nodaria tristis.*

*Bocana tristis*, Butl., Ill. Typ. Lep. Het., iii, p. 65, pl. lvii, fig. 2 (1879).
*Nodaria externalis*, Hampson, Fauna Brit. Ind., Moths, iii, p. 56 (1895).

There were specimens from Yokohama in Pryer's collection, and my native collector took an example at Gensan in July; he also obtained the species in Kiushiu, and I have received it from Ichang.

*Distribution.* JAPAN; KIUSHIU; COREA; CENTRAL CHINA.

### 1477. *Nodaria fentoni.*

*Herminia fentoni*, Butl., Ill. Typ. Lep. Het., iii, p. 63, pl. lvi, fig. 12 (1879).

Described from Yokohama. I took specimens at Fusan in June, and at Nagahama, Tsuruga, and Gensan in July.

*Distribution.* JAPAN; COREA.

### 1478. *Nodaria annulata*, sp. n.

Primaries greyish-brown heavily powdered with darker between the black transverse lines; sub-basal line short; antemedial line almost straight, slightly angled near the costa; postmedial line curved round the cell and recurved to inner margin; submarginal line straight; a blackish dot in the cell and a brown annulus at end of the cell. Secondaries fuscous-grey with faint dusky discal dot and two dark, curved-lines beyond; the outer one slightly angled towards the anal angle. Under surface greyish, primaries and costal area of secondaries powdered with brownish; all the wings have a dark discal dot and a well defined transverse line beyond.

Expanse 24 millim.

One male specimen from Ship-y-shan taken in September.

*Habitat.* CENTRAL CHINA.

### 1479. *Nodaria helva.*

*Herminia helva*, Butl., Ann. and Mag. Nat. Hist., (5) iii, p. 447 (1879).

There were specimens, without exact locality, in Pryer's collection. I took specimens in Satsuma and at Nagasaki

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in May, and my native collector took examples at Hakodate in June or July. I have also received the species from Moupin.

*Distribution.* JAPAN; KIUSHIU; YESSO; WESTERN CHINA.

1480. *Nodaria griselda.*

*Herminia griselda*, Butl., Ill. Typ. Lep. Het., iii, p. 63, pl. lvi, fig. 9 (1879).

*Zanclognatha griselda*, Staud., Rom. sur Lép., vi, p. 614 (1894).

There were specimens in Pryer's collection, probably from Yokohama, from which district the type was received. My native collector obtained examples at Gensan in June, and I took the species at Hakone in August.

*Distribution.* JAPAN; COREA; AMURLAND.

1481. *Nodaria germana*, sp. n.

Antennæ knotted about middle. Primaries grey-brown; ante- and postmedial lines, darker, the former curved from costa to inner margin and the latter curved and recurved; submarginal line rather broader than the preceding, curved from apex to the inner margin where it terminates just before the angle; discal mark lunular placed on an obscure, dusky, transverse shade. Secondaries rather paler than the primaries; medial line slightly curved; submarginal line most distinct towards the anal angle before which it is acutely angled and shaded. Fringes preceded by a fine blackish line. Under surface light brown powdered with fuscous, the secondaries rather paler; all the wings have a discal mark and curved transverse line, that on secondaries wavy.

Expanse 26–30 millim.

One male specimen and two females from Moupin; one male from Chang-yang and one female example from Ichang.

*Habitat.* CENTRAL and WESTERN CHINA.

Closely allied to *Z. griselda*, Butl., from which it is chiefly distinguished by the rather different form of the lines and by the knotted antennæ.

1482. *Nodaria angulina*, sp. n.

Antennæ knotted about middle. Primaries grey-brown with a pinkish tinge; antemedial line brown, almost erect, slightly indented below the costa; postmedial line brown, slender, sharply

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angled beyond the cell; submarginal line brown, shaded, broad, curved from the apex to inner angle; discal mark linear, curved, with a dot at its lower extremity. Secondaries colour of primaries on outer area but browner on basal and medial areas; a fine postmedial line and a broad submarginal line, the latter not extending to the costa, both are brown and angulated on abdominal area. Fringes preceded by a fine blackish line. Under surface pale fuscous-brown; primaries paler on the costa towards apex, with a dusky postmedial line which is outwardly curved beyond the cell, and an obscure discal mark; secondaries have a dusky discal lunule, a curved postmedial line and an obscure wavy submarginal line.

Expanse 46 millim.

One male specimen from Chang-yang, taken in July.

*Habitat.* CENTRAL CHINA.

Very similar to *Z. griselda*, Butl., but much larger; the postmedial line is more acutely angled, and is not indented between the angle and the inner margin. The bristles of antennæ are shorter.

### 1483. *Nodaria incerta*, sp. n.

Antennæ knotted about the middle. Similar to *N. triplex*, but some examples are strongly suffused with fuscous on all the wings. The chief differences are found in the postmedial line of primaries, which is serrate, and in the transverse lines of the secondaries, which are wider apart.

Expanse 34–41 millim.

Two examples of each sex from Ni-tou; two males from Moupin; one female from Wa-shan, and five males from Chang-yang. June and July.

*Habitat.* CENTRAL and WESTERN CHINA.

### 1484. *Nodaria triplex*, sp. n.

Antennæ knotted about middle. Primaries greyish-brown powdered with darker brown; transverse lines fuscous-brown; antemedial slightly curved or elbowed below the costa, thence nearly straight to the inner margin; postmedial undulated with a slight projection beyond the cell; submarginal rather oblique, this line is inwardly shaded with brownish and outwardly edged with whitish; there is a brownish streak from the apex to submarginal line, and a brownish medial shade, not always distinct, upon which is a blackish discal lunule. Secondaries greyish-brown powdered and suffused with darker; there is a blackish discal mark and two transverse lines, the

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latter are both obscure towards costal and abdominal margin, and angled below vein 3, the first is blackish and the second is whitish inwardly shaded with brown. Fringes preceded by a black line. Under surface pale brown dusted and suffused with fuscous; all the wings have a blackish discal mark, a curved dusky line beyond, and traces of an obscure submarginal line.

Expanse 30–40 millim.

Eleven specimens, chiefly males, from Chang-yang. Other examples were received from Ichang, and most of the localities in Western China investigated by my collectors. A female specimen from Gensan seems to be referable to this species. Occurs in June and July.

*Distribution.* CENTRAL and WESTERN CHINA; COREA.

Differs from *N. germana* in its browner coloration, and in the first line on the secondaries being angled.

### 1485. *Nodaria tarsiplumalis.*

*Pyralis tarsiplumalis*, Hübn., Pyral., fig. 125.
*Paracolax tarsiplumalis*, Hübn., Verz. Schmett., p. 244 (? 1818).
*Herminia tarsiplumalis*, Dup., Lép. Fr., viii, (2) p. 31, pl. ccxi, fig. 6 (1831).
*Zanclognatha tarsiplumalis*, Staud., Rom. sur Lép., vi, p. 609.

Dr. Staudinger records the species from Yokohama. I have specimens from Hakodate taken by Mr. Andrews.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; COREA.

### 1486. *Nodaria fumosa.*

*Herminia fumosa*, Butl., Ill. Typ. Lep. Het., iii, p. 62, pl. lvi, fig. 8 (1879).
*Zanclognatha assimilis*, Staud., Stett. Ent. Zeit., 1888, p. 275.
*Zanclognatha fumosa*, Leech, Proc. Zool. Soc., Lond., 1889, p. 562; Staud., Rom. sur Lép., vi, p. 611, (*assimilis*) pl. xiii, fig. 2 (1792).

I obtained specimens in Satsuma in May and at Nagasaki in June; those in Pryer's collection were from Yokohama, the locality from which the type was described

*Distribution.* JAPAN; KIUSHIU; AMURLAND.

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1487. *Nodaria tarsipennalis.*

*Herminia tarsipennalis*, Treit., Schmett., Suppl., p. 4.
*Zanclognatha tarsipennalis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 562.

I obtained this species in Satsuma in May, at Nagasaki and Fusan in June, and at Gensan in July; I have also received examples from Chang-yang.

*Distribution.* EUROPE.—AMURLAND; KIUSHIU; COREA; CENTRAL CHINA.

1488. *Nodaria planilinea.*

*Nodaria planilinea*, Hampson, Journ. Bomb. Nat. Hist. Soc., xi, p. 701.

I have five specimens from Chang-yang, and one taken by myself at Gensan. June and July.

*Distribution.* SIKHIM; KHÁSIS (*Hampson*); CENTRAL CHINA; COREA.

1489. *Nodaria tarsicrinalis.*

*Herminia tarsicrinalis*, Knoch., Beitr., ii, p. 75, pl. iv, figs. 1–12.
*Herminia arenosa*, Butl., Ill. Typ. Lep. Het., ii, p. 56, pl. xxxviii, fig. 8 (1878).
*Zanclognatha tarsicrinalis*, Leech, Proc. Zool. Soc., Lond., 1889, p. 562.

I took specimens at Nagasaki in May and at Gensan in June. My native collector obtained the species at Hakodate in June or July. One example was received from Chang-yang.

*Distribution.* EUROPE.—AMURLAND; KIUSHIU; YESSO; COREA.

1490. *Nodaria linealis.*

*Zanclognatha linealis*, Leech, Proc. Zool. Soc., Lond., 1889, p. 562.

I obtained a female specimen at Nagasaki in May and a male example in Satsuma.

*Habitat.* KIUSHIU.

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### 1491. *Nodaria dolosa.*

*Herminia dolosa*, Butl., Ann. and Mag. Nat. Hist., (5) iii, p. 447.

I obtained specimens at Fushiki and Gensan in July; there were specimens in Pryer's collection, and a native obtained some examples in the island of Kiushiu.

One of the Kiushiu specimens is ochreous in colour but the markings are quite typical.

*Distribution.* JAPAN; KIUSHIU; COREA.

### 1492. *Nodaria grisealis.*

*Pyralis grisealis*, Hübn., Pyral., fig. 4.
*Herminia grisealis*, Treit., Schmett., vii, p. 9.
*Paracolax nemoralis*, Steph., Ill. Brit. Ent., Haust., iv, p. 16.
*Zanclognatha grisealis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 561.

One female example taken by native collector at Hakodate in July.

Staudinger (Rom. sur. Lép., p. 614) states that this species has not been found in Amurland since Bremer recorded it from that country. He also suggests that my specimen from Hakodate is wrongly identified, but I am certain that the record is quite correct.

*Distribution.* EUROPE.—AMURLAND; YESSO.

### 1493. *Nodaria barbalis.*

*Geometra barbalis*, Clerck., Icones, v, fig. 3 (1759).
*Herminia barbalis*, Treit., Schmett., vii, p. 5.
*Pechypogon barbalis*, Steph., Ill. Brit. Ent., Haust., iv, p. 15.

I obtained a specimen at Nagasaki in May, and my native collector captured one at Hakodate in June or July.

*Distribution.* EUROPE.—AMURLAND; YESSO; KIUSHIU.

### 1494. *Nodaria centralis*, sp. n.

Antennæ serrate and fasciculate in the male. Primaries pale grey-brown; antemedial line fuscous, angled near the costa thence almost straight to the inner margin; postmedial line fuscous, angled below the costa then undulated to the inner margin; submarginal line fuscous, slightly sinuous, outwardly edged with paler and inwardly clouded with fuscous-brown; a blackish discal lunule placed on a

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irregular, not distinct; submarginal line fuscous outwardly edged with the clear ground-colour, angled before the anal angle, not extending to the costa. Fringes grey-brown preceded by a black line. Under surface whity-brown suffused on the primaries and powdered on the secondaries with fuscous-brown; all the wings have a blackish discal dot and two transverse lines beyond.

Expanse 32–36 millim.

Nine males and three females; the specimens are from Ta-chien-lu, Moupin, Wa-shan, Pu-tsu-fong, and Ichang. Occurs in June.

*Habitat.* CENTRAL and WESTERN CHINA.

### 1495. *Nodaria innocens.*

*Herminia innocens*, Butl., Ill. Typ. Lep. Het., iii, p. 63, pl. lvi, fig. 10 (1879).
*Zanclognatha undulata*, Moore, Lep. Atk., p. 193 (1882).
*Nodaria innocens*, Hampson, Fauna Brit. Ind., Moths, iii, p. 56 (1895).

Specimens were taken at Ningpo in April by myself and by my native collector in June and July; the latter also obtained the species at Gensan in July, and I received one example from Ichang; all these are typical *innocens*.

There were specimens of the type form and also of *undulata*, Moore, in Pryer's collection.

*Distribution.* DHARMSÁLA; SIKHIM; ASSAM; NILGIRIS (*Hampson*); JAPAN; COREA; EASTERN and CENTRAL CHINA.

### 1496. *Nodaria fractalis.*

*Herminia fractalis*, Guen., Delt. et Pyral., p. 60 (1854).
*Bertula raptatalis*, Walk., Cat. Lep. Het., xvi, p. 164 (1858).
*Nodaria fractalis*, Hampson, Fauna Brit. Ind., Moths, iii, p. 57 (1895).

Specimens were obtained by myself in Satsuma in May and by my native collector at Gensan in July.

*Distribution.* NATAL.—POONA; CEYLON (*Hampson*); KIUSHIU; COREA.

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1497. *Nodaria lignea.*

*Bleptina lignea*, Butl., Ill. Typ. Lep. Het., iii, p. 64, pl. lvi, fig. 14 (1879).
*Capnodes* (?) *lignea*, Staud., Rom. sur Lép., vi, p. 608 (1892).

Described from Yokohama. I obtained two specimens at Gensan in July.

*Distribution.* JAPAN; COREA; AMURLAND.

1498. *Nodaria incultalis.*

*Bleptina incultalis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 564, pl. liii, fig. 11.

The type of this species, a female, was taken by myself at Fushiki in July.

*Habitat.* JAPAN.

1499. *Nodaria maculifera.*

*Epizeuxis maculifera*, Butl., Ill. Typ. Lep. Het., vii, p. 87, pl. cxxxiv, fig. 7 (1889).
*Nodaria maculifera*, Hampson, Fauna Brit. Ind., Moths, iii, p. 59 (1895).

There was one example from Yokohama in Pryer's collection; I took one at Gensan in July and one was obtained by my native collector in Kiushiu.

*Distribution.* SIMLA; DHARMSÁLA (*Hampson*); JAPAN; KIUSHIU; COREA.

1500. *Nodaria ægrota.*

*Bleptina ægrota*, Butl., Ill. Typ. Lep. Het., iii, p. 65, pl. lvii, fig. 1 (1879).

There were specimens from Yokohama in Pryer's collection; I took examples at Nagasaki in June and my native collector obtained the species at Gensan in July.

*Distribution.* JAPAN; KIUSHIU; COREA.

1501. *Nodaria vermiculata*, sp. n.

Antennæ serrate and fasciculate. Primaries grey finely powdered with brown; antemedial line fuscous-brown, straight, angled at the costa; postmedial fuscous-brown excurved and indented beyond the cell thence incurved to inner margin; submarginal line fuscous-brown, sinuous, outwardly edged with whitish, inwardly shaded with

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brown almost to the costa where the brown shading crosses the submarginal and extends as a streak to the apex; discal lunule blackish with a brown shade below it to the inner margin. Secondaries fuscous-grey with indications towards the abdominal margin of a dusky medial line; submarginal line whitish, inwardly bordered with dark fuscous, sinuous towards the costa and angled before its termination at the anal angle. Under surface fuscous on primaries, whitish-grey powdered with fuscous on secondaries; all the wings have an obscure discal mark and two transverse lines beyond.

Expanse 30 millim.

One male specimen taken in June at Moupin.

*Habitat.* WESTERN CHINA.

Resembles the paler forms of *N. fentoni*, Butl., but differs from that species in the antennæ and in the shape of the ante- and postmedial lines.

### 1502. *Nodaria paupercula*, sp. n.

Primaries pale fuscous-grey traversed by four wavy blackish lines and a dusky central shade; the sub-basal is not distinct, the antemedial is bluntly dentate below the costa and sharply dentate above the inner margin, the postmedial is excurved beyond the cell, and the submarginal is outwardly edged with whitish; there is a blackish discal lunule on the central shade which latter is reduced to linear proportions on the costa above the lunule. Secondaries paler than the primaries and suffused with fuscous; medial and submarginal lines obscure, the latter outwardly edged with whitish, sharply angled above the anal angle. Under surface of primaries fuscous, that of secondaries greyish powdered with fuscous; all the wings have a blackish discal dot and two transverse lines beyond.

Expanse 27–30 millim.

Three females from Wa-ssu-kow, one from Chia-ting-fu, and one from Chow-pin-sa. Occurs in June.

*Habitat.* WESTERN CHINA.

### 1503. *Nodaria nigrisigna*, sp. n.

Primaries pale brownish-grey with three blackish transverse lines, the sub-basal is short, the antemedial is wavy and expands on the costa, the postmedial is elbowed about the middle and originates in a blackish patch on the costa; submarginal line pale sinuous shaded inwardly with blackish about the middle and intersecting a blackish apical cloud; reniform stigma blackish with pale centre; fringes grey marked with paler, preceded by a pale line and a series

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of black lunules. Secondaries pale fuscous with a dusky medial line and pale submarginal line, the latter angled before its termination at anal angle and edged with blackish, these lines are not continued to the costa; fringes grey preceded by pale and blackish lines. Under surface greyish-brown; all the wings have a discal mark and a curved postmedial line but these are most distinct on the secondaries; submarginal line pale edged with blackish, sometimes absent.

Expanse 23–30 millim.

Two male specimens from Chang-yang, one female from Ichang, one example of the latter sex from Ship-y-shan, and one example of each sex from Wa-ssu-kow. All the specimens, except that from Ship-y-shan which was taken in September, were captured in June.

*Habitat.* CENTRAL and WESTERN CHINA.

### 1504. *Nodaria sinensis*, sp. n.

Primaries light-brown with black sub-basal, antemedial and postmedial lines, the first short, the second sinuous, the third elbowed beyond the cell; submarginal line pale shaded inwardly with blackish, this blackish shade is continued to the apex of the wing before which it is intersected by the pale submarginal line; a marginal series of black lunules; reniform stigma outlined in black, the inner edge broadest. Secondaries pale fuscous with blackish discal mark and medial line; postmedial line pale shaded inwardly with blackish, not continued to the costa; marginal lines as on the primaries. Under surface whitish suffused with brown on the primaries and powdered with brown on costal and outer marginal areas of the secondaries; all the wings have a black discal mark and line beyond, the latter is curved on the primaries and wavy on the secondaries; the secondaries have a pale postmedial line which is inwardly edged with black except between veins 6 and 7; black marginal spots as above.

Expanse 26 millim.

Two male specimens from Chang-yang. June and July.

*Habitat.* CENTRAL CHINA.

Appears to be allied to *N. palumbina*, Butl., from Dharmsála and Sikhim.

### 1505. *Nodaria derivalis.*

*Pyralis derivalis*, Hübn., Pyral., fig. 19.
*Herminia derivalis*, Treit., Schmett., vii, p. 7.

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Specimens in Pryer's collection, probably from the Yokohama district; others were taken by myself at Gensan in June and by native collector at Hakodate in June or July. I have received examples from Chang-yang, Pu-tsu-fong, and Chow-pin-sa.

*Distribution.* EUROPE.—JAPAN; YESSO; COREA; CENTRAL and WESTERN CHINA.

### 1506. *Nodaria stramentacealis.*

*Herminia stramentacealis*, Brem., Lep. Ost-Sib., p. 64 (*stramentalis*), pl. v, fig. 22 (1864).
*Zanclognatha stramentacealis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 562.

I have two examples from Nagahama, and two from Chang-yang.

*Distribution.* AMURLAND; JAPAN; CENTRAL CHINA.

### 1507. *Nodaria fascialis.*

*Herminia fascialis*, Leech, Entom., xxii, p. 64, pl. ii, fig. 3 (1889).

One male specimen taken by native collector at Hakodate in July.

*Habitat.* YESSO.

### 1508. *Nodaria subnubila*, sp. n.

Primaries glossy brown suffused with purplish in certain lights, darker on the basal half; ante- and postmedial lines blackish, wavy; central shade and submarginal line dusky, the latter wavy with white dots on it; reniform stigma outlined and partly filled in with black, orbicular black, punctiform; fringes preceded by an interrupted black line. Secondaries fuscous-brown with indications of two darker transverse lines. Under surface fuscous-brown; all the wings have a black or blackish discal mark, a dark postmedial line, and a dark edged whitish submarginal line, the latter is wavy on the secondaries and more distinct than on the primaries where it is chiefly in evidence towards the costa.

Expanse 42–46 millim.

I have examples of this species from Ta-chien-lu, Omei-shan, Wa-shan, Ni-tou, and Wa-ssu-kow. Occurs in July. Both sexes are represented.

*Habitat.* WESTERN CHINA.

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### 1509. *Nodaria* (?) *grandis.*

*Pechipogon* (?) *grandis,* Alph., Rom. sur Lép., vi, p. 49, pl. ii, fig. 11 (1892).

Alphéraky describes this species from a male specimen obtained from the province of Gan-son and a female captured in the province of Setchouén. July and August.

*Habitat.* NORTHERN and WESTERN CHINA.

The following five species are closely allied to the above, the nearest perhaps being *N. alpherakyi.* With the exception of *N. punctilinea* all are larger in size than *N. grandis.*

### 1510. *Nodaria* (?) *alpherakyi,* sp. n.

Antennæ serrate with long paired bristles in the male. Primaries greyish-brown powdered with blackish; ante- and postmedial lines blackish, sinuous, the latter excurved beyond the cell; submarginal line blackish, interrupted; reniform stigma black, centre sometimes paler. Secondaries slightly paler with two blackish transverse lines both slightly angled before abdominal margin and neither extending to the centre. Under surface rather paler than above; a blackish discal mark and two conspicuous transverse lines on each wing.

Expanse 44–48 millim.

Nine male specimens and one female from Moupin, taken in July.

*Habitat.* WESTERN CHINA.

### 1511. *Nodaria* (?) *sordida,* sp. n.

Antennæ of the male serrated with paired bristles, knotted before the middle. Primaries grey-brown powdered with fuscous; ante- and postmedial lines hardly traceable; submarginal line fuscous edged outwardly with greyish and most clearly defined towards the inner margin; reniform stigma blackish, sometimes with pale centre. Secondaries colour of primaries with a fuscous submarginal line terminating just above the anal angle. Under surface fuscous-grey powdered with darker on the secondaries and costal area of the primaries, discal area of primaries suffused with fuscous.

Expanse 48–54 millim.

Fifteen male specimens and five females from Moupin, taken in June and July.

*Habitat.* WESTERN CHINA.

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Antennæ fasciculate in both sexes, but the fascicles are longer in the male than in the female. Primaries pale brown powdered with darker and suffused with fuscous on the outer margin; ante- and postmedial lines blackish, wavy, the former angled below the median nervure, the latter angled near costa and excurved beyond the cell; submarginal line blackish, with blacker dots upon it; reniform stigma black with a dusky shade from its lower edge to the inner margin. Secondaries paler and rather greyish in tone; there are indications of a medial line; submarginal line blackish edged outwardly with whitish. Under surface brownish with blackish discal mark and two transverse lines beyond; the secondaries are paler than the primaries.

Expanse ♂ 40, ♀ 42 millim.

One example of each sex, taken in May or June, at Ta-chien-lu.

*Habitat.* WESTERN CHINA.

The female example is rather paler than the male and the ante- and postmedial lines are less distinct.

### 1513. *Nodaria* (?) *angulata*, sp. n.

Antennæ, finely bipectinate. Primaries light brown powdered with darker; ante- and postmedial lines dark brown, wavy, the former angled below the median nervure, the latter angled below costa and excurved beyond the cell; reniform stigma outlined in dark brown; submarginal line blackish, interrupted, edged with whitish. Secondaries fuscous-brown with two darker transverse lines the outer of which is wavy, angulated before reaching the abdominal margin, and edged externally with whitish. Under surface brown, powdered with darker on the secondaries and costal area of the primaries; all the wings have a dark discal mark and two transverse lines.

Expanse 52 millim.

One male specimen from Wa-shan, taken in May.

*Habitat.* WESTERN CHINA.

### 1514. *Nodaria* (?) *mandarina*, sp. n.

Antennæ of male broadly bipectinate. Primaries pale grey-brown powdered with darker; antemedial and postmedial lines fuscous, wavy, diffuse, the latter excurved beyond the reniform stigma which is outlined in dark fuscous; submarginal line fuscous, undulated,

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outwardly edged with whitish. Secondaries slightly paler with two fuscous transverse lines both curved towards the abdominal margin, the outer edged with whitish. Under surface pale fuscous-brown, all the wings have a dark, serrate, postmedial line with indications of a second line beyond, and a discal mark.

Expanse 58–62 millim.

Eleven male specimens and five females from Moupin, taken in June and July.

Var. *pallens*, nov.

Differs from the type in its smaller size and paler colour, the secondaries being distinctly whitish; the antemedial and postmedial lines and the reniform stigma are similar to these characters in the type, but the submarginal line is wavy rather than undulated. The pectination of the male antennæ is rather finer than in the type.

Expanse ♂ 48, ♀ 54 millim.

Two male specimens and one female from Moupin. June and July.

*Habitat.* WESTERN CHINA.

## Genus OLULIS.

Walk.; Hampson, Fauna Brit. Ind., Moths, iii, p. 65 (1895).

### 1515. *Olulis puncticinctalis.*

*Olulis puncticinctalis*, Walk., Cat. Lep. Het., xxvii, p. 127 (1863).

*Hamaxia lignulina*, Walk., l. c., p. 128.

I obtained one example of the *lignulina* form at Nagasaki in May.

*Distribution.* NÁGAS; CEYLON; BORNEO (*Hampson*); KIUSHIU.

## Genus MECISTOPTERA.

Hampson, Ill. Typ. Lep. Het., ix, p. 134 (1893).

### 1516. *Mecistoptera polybapta.*

*Egnasia polybapta*, Butl., Ill. Typ. Lep. Het., iii, p. 66, pl. lvii, fig. 7 (1879).

There was a specimen from Yokohama in Pryer's collection; I obtained others at Nagasaki, and in Satsuma in May and at Gensan in July.

*Distribution.* JAPAN; KIUSHIU; COREA.



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Hampson, Journal Bomb. Nat. Hist. Soc., xi, p. 705.

1517. *Plumipalpia simplex*, sp. n.

Pale whity-brown sparingly powdered and slightly suffused with darker brown. Primaries have a black lunule placed on a whitish spot at the outer end of the cell and there is an obscure dark transverse shade beyond, this shade is marked with black on the inner margin and there is a similar but shorter mark on the middle of the inner margin; other indistinct black or blackish markings on the outer margin. Under surface pale whity-brown finely powdered with fuscous.

Expanse 38 millim.

One male specimen from Ichang, obtained in July.
*Habitat.* CENTRAL CHINA.

Genus TALAPA.

Moore, Proc. Zool. Soc. Lond., 1867, p. 82.

1518. *Talapa* (?) *obliquilineata*, sp. n.

Pale greyish-brown slightly tinged with pink. Primaries have three, dark brown or reddish-brown, transverse lines, the first is curved, the second broad and oblique, the third is nearly straight and is followed towards the costa by a black dot or small cloud; a black dot in the cell between 1st and 2nd lines. Secondaries have also three transverse lines, the first of which is broad and appears to be a continuation of the second line of the primaries, the second and third lines are oblique and almost parallel with each other. Under surface pale fuscous-brown; primaries have two oblique lines and secondaries have two sinuous lines.

Expanse ♂ 50, ♀ 54 millim.

One male specimen and two females from Omei-shan. June and July.
*Habitat.* WESTERN CHINA.

Genus CAMPTOCHILUS.

Hampson, Fauna Brit. Ind., Moths, iii, p. 68 (1895).

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### 1519. *Camptochilus* (?) *opalina.*

*Egnasia opalina*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 451.

Described from Yokohama; there were three specimens in Pryer's collection. Mr. Andrews obtained the species at Hakodate, and I took examples at Nagasaki in June.

*Habitat.* JAPAN; YESSO; KIUSHIU.

### 1520. *Camptochilus butleri*, sp. n.

Pale violet-grey tinged with brownish strongly so on the basal two-thirds of the primaries. Primaries have whitish ante- and post-medial lines but these are only clearly defined on the costal area, the first is wavy and the second is excurved beyond the cell; submarginal line whitish, wavy, indistinct. Secondaries have indications of two whitish transverse lines. Fringes brownish-grey tipped with white except at apex and angle of primaries. Under surface of primaries leaden-grey, tinged with ochreous; of the secondaries pale violet-grey powdered with fuscous; all the wings have traces of two transverse lines.

Expanse 20–22 millim.

I obtained two male specimens and a female at Nagasaki in May, and a native collector captured six other examples in Kiushiu.

I previously confused this species with *Ilyrgis echephusealis*, Walk., and it is referred to under this name in my paper (Proc. Zool. Soc. Lond., 1889, p. 566).

*Habitat.* KIUSHIU.

### 1521. *Camptochilus* (?) *albomaculalis.*

*Herminia albomaculalis*, Brem., Lep. Ost.-Sib., p. 65, pl. v, fig. 24 (1864).

Specimens were obtained by myself at Gensan in June and July, and by my native collector at Ningpo in June. There were examples in Pryer's collection.

*Distribution.* JAPAN; COREA; EASTERN CHINA; AMUR-LAND.

## Genus DICHROMIA.

Guenée, Delt. et Pyral., p. 18 (1854).

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1522. *Dichromia claripennis.*

*Dichromia claripennis*, Butl., Ill. Typ. Lep. Het., ii, p. 54, pl. xxxviii, fig. 2 (1878).

I took an example at Ningpo in April, another at Gensan in July; there was one without locality, in Pryer's collection, and I have one from the island of Kiushiu.

*Distribution.* JAPAN; KIUSHIU; COREA; EASTERN CHINA.

1523. *Dichromia trigonalis.*

*Dichromia trigonalis*, Guen., Delt. et Pyral., p. 19 (1854); Hampson, Fauna Brit. Ind., Moths, iii, p. 73 (1895).
*Dichromia sextalis*, Walk., Cat., xvi, p. 15 (1858).
*Dichromia amica*, Butl., Ill. Typ. Lep. Het., ii, p. 55, pl. xxxviii, fig. 3 (1878); Leech, Proc. Zool. Soc. Lond., 1889, p. 556.
*Bromolocha opulenta*, Christ., Horæ., Soc. Ent. Ross., p. 258, pl. vii, fig. 29 (1877).

There was one specimen, without locality, in Pryer's collection. I took the species at Nagasaki in June, at Fushiki in July, and my native collector obtained it at Gensan in the latter month. I have also received examples from Chang-yang, Ichang, and most of the localities in Western China that my collectors visited during the months of June and July.

*Distribution.* ASTRABAD; FORMOSA; throughout the HIMALAYAS; KHÁSIS (*Hampson*); JAPAN; KIUSHIU; COREA; CENTRAL and WESTERN CHINA.

Genus RHYNCHINA.

Guenée, Delt. et Pyral., p. 20 (1854).

1524. *Rhynchina abducalis.*

*Hypena abducalis*, Walk., Cat. Lep. Het., xvi, p. 66 (1858).
*Hypena vigens*, Butl., Ill. Typ. Lep. Het., ii, p. 55, pl. xxxviii, fig. 4 (1878).
*Hypena incurvata*, Moore, Lep. Atk., ii, p. 189 (1882).
*Rhynchina abducalis*, Hampson, Fauna Brit. Ind., Moths, iii, p. 74 (1895).

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There were specimens in Pryer's collection, but these were without locality tickets.

*Distribution.* Throughout INDIA; ANDAMANS; JAVA (*Hampson*); CHUSAN ISLES; JAPAN.

### 1525. *Rhynchina columbaris.*

*Hypena columbaris,* Butl., Ill. Typ. Het., ii, p. 55, pl. xxxviii, fig. 7 (1878).

*Rhynchina abducalis* (part.), Hampson, Fauna Brit. Ind., Moths, iii, p. 74 (1895).

I obtained this species at Fusan in June, and at Gensan in July. It was described from Yokohama.

*Distribution.* JAPAN; COREA.

### 1526. *Rhynchina angustalis.*

*Rhynchina angustalis,* Warren, Proc. Zool. Soc. Lond., 1888, p. 317.

I have three specimens from Chang-yang.

*Distribution.* INDIA; CENTRAL CHINA.

### 1527. *Rhynchina kengkalis.*

*Hypena kengkalis,* Brem., Lep. Ost.-Sib., p. 63, pl. v, fig. 21 (1864).

I obtained examples at Nagasaki in June, at Hakodate in August, and at Oiwake in October. There were specimens in Pryer's collection, but these were without data. I have received one specimen from Chang-yang and one from Kiukiang.

*Distribution.* AMURLAND; JAPAN; YESSO; KIUSHIU; CENTRAL CHINA.

### 1528. *Rhynchina similalis.*

*Hypena similalis,* Leech, Proc. Zool. Soc. Lond., 1889, p. 558, pl. lii, fig. 2.

Three male specimens from Oiwake and one example of the same sex from Nikko.

The latter was taken by my native collector in September, and the former were obtained by myself in October.

*Habitat.* JAPAN.

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*Hormisa cramboides*, Butl., Ill. Typ. Lep. Het., [illegible] pl. lvi, fig. 6 (1879).
*Rhynchina pionealis* (part.), Hampson, Fauna Brit. Ind., Moths, iii, p. 75 (1895).

There were specimens from Yokohama in Pryer's collection, and examples were obtained at Nagasaki in June by native collector. I have also received specimens from Chang-yang, Ta-chien-lu, and Chow-pin-sa.

*Distribution.* JAPAN; KIUSHIU; CENTRAL and WESTERN CHINA.

1530. *Rhynchina morosa.*

*Hormisa morosa*, Butl., Ann. and Mag. Nat. Hist., (5) iii, p. 446 (1879).
*Rhynchina striga* (part.), Hampson, Fauna Brit. Ind., Moths, iii, p. 74 (1895).

My native collector obtained examples at Nagasaki in June, and others were taken by myself at Shimonoseki in July and at Hakone in August. The type was from Yokohama. I have also specimens from Chang-yang, Moupin, Chow-pin-sa, and Gensan.

*Distribution.* JAPAN; KIUSHIU; CENTRAL and WESTERN CHINA; COREA.

1531. *Rhynchina striga.*

*Thalpochares striga*, Feld., Reise Novara., Lep., pl. cix, fig. 29 (1874).
*Rhynchina striga*, Hampson, Fauna Brit. Ind., Moths, iii, p. 74 (1885).

Three specimens from Chow-pin-sa, taken in May and June.

*Distribution.* SIMLA; DHARMSÁLA; NORTH CHIN HILLS (*Hampson*); KULU; WESTERN CHINA.

1532. *Rhynchina calamina.*

*Hormisa calamina*, Butl., Ann. and Mag. Nat. Hist., (5) iii, p. 446 (1879).

There was a specimen, probably from Yokohama, in Pryer's collection, and I took one example at Nagasaki in June.

*Habitat.* JAPAN and KIUSHIU.

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### 1533. *Rhynchina plusioides.*

*Hormisa plusioides*, Butl., Ill. Typ. Lep. Het., iii, p. 61, pl. lvi, fig. 5 (1879).

Described from Yokohama. I have specimens from Satsuma, Nagasaki, and Gensan, also from Chang-yang and Ship-y-shan.

*Distribution.* JAPAN; KIUSHIU; CENTRAL CHINA; COREA.

### 1534. *Rhynchina sagittata.*

*Rhynchina sagittata*, Butl., Ill. Typ. Lep. Het., vii, p. 33, pl. cxxxiii, figs. 10, 11 (1889).

*Rhynchina angulata* (part.), Hampson, Fauna Brit. Ind., Moths, iii, p. 75 (1895).

Specimens were obtained by native collector and myself at Gensan, others were received from Chang-yang. I also have one example from Sultanpore, sent to me by Captain Young; this agrees with the type, but the Corean and Chinese specimens are variegated with lilacine on discal and apical areas of the primaries.

*Distribution.* DHARMSÁLA; KULU; CENTRAL CHINA; COREA.

### 1535. *Rhynchina angulata.*

*Epimecia angulata*, Walk., Trans. Ent. Soc. Lond., (3) i, p. 88 (1862).

*Rhynchina angulata*, Hampson, Fauna Brit. Ind., Moths, iii, p. 75 (1895).

I have one male specimen, taken in July at Chang-yang, which seems to be referable to this species.

*Distribution.* INDIA; CENTRAL CHINA.

### 1536. *Rhynchina mandarinalis*, sp. n.

Male. Primaries ashy-grey streaked and clouded with darker, some black and white marks on the costa before apex; postmedial line dark grey edged with paler, commencing from a point just beyond the middle of the costa it curves outwards and then inwards beyond the end of the cell terminating near the middle of the inner margin, its lower portion is marked with black; submarginal line obscure except before the dentation of inner margin where it is white intersecting a short black longitudinal streak; stigmata obscure. Secondaries pale brownish powdered with fuscous, a blackish line

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before the fringes. Under surface pale brown, the primaries clouded with fuscous, and the costal and outer areas of secondaries tinged with brownish.

Female. Darker; the grey coloration of primaries being largely obscured by the darker clouding, the lower half of the basal area is pale brownish and the upper portion of the submarginal line is in evidence and greyish in colour.

Expanse 34 millim.

Three male specimens and seven females from Chang-yang. May and June.

*Habitat.* CENTRAL CHINA.

### 1537. *Rhynchina biformatalis*, sp. n.

Male. Primaries brown suffused on the costa and on basal two-thirds with cinereous, some white marks on apical third of costa; postmedial line dark brown elbowed beyond the end of the cell and followed by an oblique cinereous line from the apex which forms an edging to the postmedial from the elbow to the inner margin; submarginal line cinereous, wavy and sinuous, the area beyond tinged with ferruginous; reniform stigma cinereous with two black dots upon it. Secondaries fuscous-brown with a blackish discal dot. Under surface of primaries brown suffused with fuscous and cinereous, white marks on the costa as above; secondaries ochreous-brown powdered with darker, an obscure medial line parallel with the outer margin.

Female. Primaries brown; a creamy streak above the inner margin extending from the base to oblique line which is whiter than in the male; the reniform is tinged with ferruginous and has a white dot at its lower end; the outer margin is ferruginous and the submarginal line is tinged with the same colour.

Expanse 30 millim.

One male specimen and three females from Chow-pin-sa, taken in May and June.

*Habitat.* WESTERN CHINA.

## Genus HYPENODES.

Guenée, Delt. et Pyral., p. 41 (1854).

### 1538. *Hypenodes albistrigalis.*

*Crambus albistrigatus*, Haw., Lep. Brit., p. 368 (1803).
*Cledeobia albistrigatus*, Steph., Ill. Brit. Ent., Haust., iv, p. 20 (1834).

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I obtained one example at Nagasaki in May.
*Distribution.* EUROPE.—KIUSHIU.

## Genus HYPENA.

Schrank; Hampson, Fauna Brit. Ind., Moths, iii, p. 76 (1895).

### 1539. *Hypena rostralis.*

*Pyralis rostralis*, Linn., Syst. Nat., x, p. 533; Hübn., Pyral., figs. 10, 191.
*Hypena rostralis*, Treit., Schmett., vii, 29.
*Crambus whitelyi*. Butl., Ill. Typ. Lep. Het., iii, p. 78, pl. lx, fig. 2 (1879).

I obtained one example at Hakodate in August, Butler's type was also from the same locality.
*Distribution.* EUROPE.—YESSO.

### 1540. *Hypena rectivittalis.*

*Hypena rectivittalis*, Moore, Proc. Zool. Soc. Lond., 1867, p. 84; Hampson, Fauna Brit. Ind., Moths, iii, p. 81 (1895).
*Hypena minna*, Butl., Ill. Typ. Lep. Het., iii, p. 59, pl. lv, fig. 12 (1879).

There was a long series of this species in Pryer's collection, the typical and *minna* forms being about equally represented. I have also received examples of both forms from Gensan, Ichang, and Chang-yang. *Minna* only was obtained in Satsuma, and Pryer's Loochoo specimens were referable to that form.
*Distribution.* AFRICA; NORTH-WEST HIMALAYAS; PUNJAB; BOMBAY; NILGIRIS (*Hampson*); JAPAN; KIUSHIU; COREA; CENTRAL CHINA.

### 1541. *Hypena iconicalis.*

*Hypena iconicalis*, Walk., Cat. Lep. Het., xvi, p. 61 (1858); Moore, Lep. Ceyl., iii, p. 225, pl. clxxv, fig. 9 (1885); Hampson, Fauna Brit. Ind., Moths, iii, p. 81 (1895).

One example taken at Moupin in July.
*Distribution.* ASSAM; throughout PENINSULAR INDIA; CEYLON, and BURMA; JAVA; SULA; MYSOL (*Hampson*); WESTERN CHINA.

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### 1542. *Hypena indicatalis.*

*Hypena indicatalis*, Walk., Cat. Lep. Het., xvi, p. 61 (1858); Hampson, Fauna Brit. Ind., Moths, iii, p. 89 (1895).

Specimens were taken by myself at Nagasaki and in Satusma in May and by my native collector at Gensan in July. I have also received examples from Ship-y-shan, and there were some in Pryer's collection from Yokohama.

*Distribution.* NATAL.—Throughout INDIA, CEYLON, and BURMA; BORNEO; JAVA; CELEBES (*Hampson*); KIUSHIU; JAPAN; CENTRAL CHINA; COREA; LOOCHOO.

### 1543. *Hypena occata.*

*Hypena occatus*, Moore, Lep. Atk., ii, p. 191 (1882).
*Hypena crassipalpis*, Butl., Ill. Typ. Lep. Het., p. 85, pl. cxxxiii, fig. 16 (1889).
*Hypena occata*, Hampson, Fauna Brit. Ind., Moths, iii, p. 90 (1895).

Obtained from Gensan in July, and from Ship-y-shan in September.

*Distribution.* DHARMSÁLA; SIKHIM; KHÁSIS; NILGIRIS; CEYLON (*Hampson*); KULU; CENTRAL CHINA; COREA.

### 1544. *Hypena proboscidalis.*

*Pyralis proboscidalis*, Linn., Syst. Nat., i, 2, p. 881; Hübn., Pyral., pl. ii, fig. 7.
*Hypena proboscidalis*, Treit., Schmett., p. 22; Guen., Delt. et Pyral., p. 30 (1854).
*Hypena indicalis*, Guen., Delt. et Pyrales, p. 31 (1854).
*Hypena tatorhina*, Butl., Ill. Typ. Lep. Het., iii, p. 60, pl. lv, fig. 13 (1879).
*Hypena proboscidalis*, Hampson, Fauna Brit. Ind., Moths, iii, p. 77 (1895).

This very variable species has been received by me from Yokohama and several localities in Western China. It occurs from May to July.

*Distribution.* KULU; SIKHIM; KHÁSIS (*Hampson*); YESSO; JAPAN; AMURLAND; WESTERN CHINA.—EUROPE.

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### 1545. *Hypena rusticalis.*

*Hypena rusticalis*, Leech, Entom., xxii, p. 63, pl. ii, fig. 12 (1889).

One male specimen taken by myself at Hakodate in August.

*Habitat.* YESSO.

### 1546. *Hypena incisa*, sp. n.

Primaries violet-grey; medial third clouded with fuliginous and black, the inner edge of this area is defined by a pale line and is bidentate above the middle and deeply incised before the inner margin, the outer edge is limited by a pale line followed by a dusky one and is slightly oblique with a small angular projection above the middle; a broad fuliginous, wavy submarginal band, the edges darker and outwardly marked with whitish towards the costa; a fuliginous subapical cloud with a black bar and linear spot on it. Secondaries fuscous. Under surface fuscous, paler on abdominal half of the secondaries; all the wings have an obscure discal dot and indications of a transverse line beyond; the primaries have a double white spot on the costal area before the apex.

Expanse 30 millim.

One female specimen from Wa-shan, taken in July.

*Habitat.* WESTERN CHINA.

### 1547. *Hypena ella.*

*Hypena ella*, Butl., Ill. Typ. Lep. Het., ii, p. 55, pl. xxxviii, fig. 5 (1878).

Described from Yokohama, I obtained specimens at Nagasaki in May.

*Habitat.* JAPAN and KIUSHIU.

### 1548. *Hypena belinda.*

*Hypena belinda*, Butl., Ill. Typ. Lep. Het., iii, p. 61, pl. lvi, fig. 3 (1879).

Specimens were obtained by myself at Fushiki in July, at Nikko in September, and at Oiwake in October; my native collector also obtained the species at Nagasaki in June and at Gensan in July. The type was from Yokohama.

*Distribution.* JAPAN; KIUSHIU; COREA.

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*Hypena albopunctalis,* Leech, Proc. Zool. Soc. Lond., 1889, p. 557, pl. lii, fig. 10.

The type of this species was taken at Gensan in July; I have also one specimen from Ship-y-shan where it was captured in September.

*Distribution.* COREA; CENTRAL CHINA.

1550. *Hypena subcyanea.*

*Hypena subcyanea,* Butl., Proc. Zool. Soc. Lond., 1880, p. 681.

The type was from Formosa. There were three examples in Pryer's collection without locality tickets. I have specimens from Foochau and Gensan, the former were taken by myself in April and the latter by native collector in July. Two examples, taken in June, were received from Chang-yang.

*Distribution.* FORMOSA; COREA; FOOCHAU; CENTRAL CHINA.

1551. *Hypena masurialis.*

*Hypena masurialis,* Guen., Delt. et Pyral., p. 38 (1854); Hampson, Fauna Brit. Ind., Moths, iii, p. 79 (1895).
*Hypena obacerralis,* Walk., Cat. Lep. Het., xvi, p. 53 (1858).
*Ophiuche obaccrralis,* Moore, Lep. Ceyl., iii, p. 229, pl. clxxv, fig. 5 (1885).

One specimen from Ship-y-shan, taken in September.

*Distribution.* EAST AFRICA.—KASHMIR; WESTERN and SOUTHERN INDIA; CEYLON; BURMA; AUSTRALIA (*Hampson*); CENTRAL CHINA.

1552. *Hypena satsumalis.*

*Hypena satsumalis,* Leech, Entom., xxii, p. 62, pl. ii, fig. 13 (1889).

I took five specimens in Satsuma in May.

*Habitat.* KIUSHIU.

1553. *Hypena stygiana.*

*Hypena stygiana,* Butl., Ill. Typ. Lep. Het., ii, p. 55, pl. xxxviii, fig. 6 (1887).

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Described from Yokohama. I obtained specimens at Nagasaki in May, at Hakodate in June, July, and August, and my native collector took examples at Gensan in July. In the National Collection at South Kensington there is a specimen from Che-kiang.

*Distribution.* JAPAN; YESSO; KIUSHIU; COREA; EASTERN CHINA; AMURLAND.

### 1554. *Hypena zilla.*

*Hypena zilla*, Butl., Ill. Typ. Lep. Het., iii, p. 60, pl. lvi, fig. 1 (1879).
*Bomolocha zilla*, Staud., Rom. sur Lép., vi, p. 625 (1892).

I received one specimen from Mr. Manley of Yokohama. The type was from Hakodate.

*Distribution.* JAPAN; YESSO; AMURLAND.

### 1555. *Hypena rhombalis.*

*Hypena rhombalis*, Guen., Delt. et Pyral., p. 33 (1854); Hampson, Fauna Brit. Ind., Moths, iii, p. 83 (1895).
*Hypena veronica*, Butl., Ill. Typ. Lep. Het., vii, p. 85, pl. cxxxiii, fig. 17 (1889).

I obtained specimens at Ningpo in April and at Hakodate in August, and I have received examples, taken in June and July, from Chang-yang, Moupin, Omei-shan, and Wa-shan.

The following forms of these species seem to be worthy of varietal names.

Var. *perspicua*, nov. The rhombus, which is clearly outlined in white, has its outer angle rather more produced than in the type, and is well separated from the apical streak; the lower angle extends to the inner margin as in var. *veronica*.

Occurs at Moupin, Omei-shan, Ichang, and Ship-y-shan.

Var. *obscura*, nov. Almost entirely fuliginous, the only markings in evidence being the costal end of the white outline of the rhombus, a white apical cloud, and some white dots representing the submarginal line.

Occurs at Moupin and Omei-shan.

*Distribution.* SIKHIM; KHÁSIS; BORNEO (*Hampson*); CENTRAL, EASTERN, and WESTERN CHINA; YESSO.

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*Hypena obductalis*, Walk., Cat. Lep. Het., xvi, p. 56 (1858)
Hampson, Fauna Brit. Ind., Moths, iii, p. 83 (1895).
*Bomolocha rhombalis*, Alph., Rom. sur Lép., vi, p. 50, pl. i
fig. 10 ♀ (1892).

One example from Chang-yang, captured in August and one from each of the following localities—Omei-shan Che-tou, and Chow-pin-sa, these were taken in June an July.

Alphéraky records this species from the province of Set chouén under the name *B. rhombalis*, Walk.

*Distribution.* SIMLA; DHARMSÁLA; SIKHIM; KHÁSI (*Hampson*); CENTRAL and WESTERN CHINA.

### 1557. *Hypena mandarina*, sp. n.

Primaries grey clouded with fuscous-brown; a large irregula chocolate-brown patch occupies nearly the whole of the medial are and extends to the costa, the external edge of this patch, which is bo dered with whitish, is incurved to vein 5, where it is obtusely angle thence inwardly oblique and nearly straight to just above the middl of the inner margin where it curves upwards and continues in a oblique direction to the base of the wing; a thin brownish lin parallel with contour of the patch and a diffuse blackish, obliqu streak from the apex; submarginal line represented by a wavy seri of black and white dots. Secondaries fuscous with a blackish disc lunule. Under surface pale brown powdered with fuscous, suffuse with fuscous on the primaries; all the wings have a discal mar black and prominent on secondaries, and a fuscous postmedial lin the latter is slightly elbowed about the middle; primaries have whole dot below the costa towards the apex.

Expanse 40 millim.

One example of each sex from Ta-chien-lu, one ma from Pu-tsu-fong, and one from Chang-yang. June an July.

*Habitat.* CENTRAL and WESTERN CHINA.

Allied to *H. rhombalis*, Guen.

### 1558. *Hypena squalida*.

*Hypena squalida*, Butl., Ill. Typ. Lep. Het., iii, p. 60, p lvi, fig. 2 (1879).
*Hypena fontis*, Leech, Proc. Zool. Soc. Lond., 1889, p. 55

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Described from Yokohama. I have examples of this variable species from Satsuma, Yokohama and Gensan; some of these specimens I previously referred to *H. zilla*, Butl., which I then considered to be a form of *H. fontis*, Thunb.

*Distribution.* JAPAN; KIUSHIU; COREA.

### 1559. *Hypena tenebralis.*

*Hypena tenebralis*, Moore, Proc. Zool. Soc. Lond., 1867, p. 83; Hampson, Fauna Brit. Ind., Moths, iii, p. 82 (1895).

One specimen from Wa-shan, taken in July.

*Distribution.* SIKHIM; KHÁSIS (*Hampson*); WESTERN CHINA.

### 1560. *Hypena obesalis.*

*Hypena obesalis*, Treit., Schmett., vii, 27.

*Hypena tristalis*, Led., Verh. zool. bot. Ges. Wien, v, p. 26 (1864).

*Hypena tripunctalis*, Brem., Lep. Ost.-Sib., p. 62, pl. v, fig. 20 (1864).

Examples were received from Yokohama, Hakodate, Chang-yang, Ta-chien-lu, Pu-tsu-fong, and Moupin. June, July and August.

I consider *tristalis*, Led., to be only the eastern form of *obesalis*, Treit.; I have examples from the north-west Himalayas which appear to be referable to this species.

*Distribution.* EUROPE.—AMURLAND; JAPAN; YESSO; CENTRAL and WESTERN CHINA.

### 1561. *Hypena insolita*, sp. n.

Primaries pale fuscous-brown, basal area clouded with chocolate-brown and flecked with lilacine; antemedial line lilacine, upper half nearly straight, lower half obliquely sinuous; postmedial line blackish edged with white on the costa, sinuous, with a strong outward projection above the middle and approaching the antemedial line from vein 1 to the inner margin; there is a diffuse, wavy, medial shade and the submarginal line is represented by a series of black lunules and dots edged with lilacine; the latter preceded by some patches of greyish scales between veins 1 and 5; a short black mark from outer margin just below the apex to the submarginal line. Secondaries paler fuscous-brown. Under surface whity-brown suffused with fuscous; all the wings have an obscure discal mark and a dusky

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postmedial line, the primaries have also a short dusky streak edged with whitish on the costal area towards the apex.

Expanse 30 millim.

One female specimen taken at Pu-tsu-fong in June or July.

*Habitat.* WESTERN CHINA.

### 1562. *Hypena confusa*, sp. n.

Male. Primaries fuscous-brown, clouded with darker on the basal half; ante- and postmedial lines blackish, the first wavy but indistinct, the second vertical and slightly sinuous; a dark subapical patch enclosing a white dot; submarginal line indicated by a sinuous series of black dots, the upper dots obscured by a small blackish cloud. Secondaries fuscous. Fringes of the ground-colour preceded by a blackish line, that on primaries with black dots on it. Under surface fuscous; primaries with a white subapical dot, secondaries have a blackish discal dot and curved transverse line beyond.

Female. Primaries pale brown irrorated with fuscous-brown, clouded with blackish on basal half, the costal area is whitish before the sub-apical patch; antemedial line more clearly defined than in the male; postmedial line obscured, submarginal black dots well defined.

Expanse 34 millim.

One male specimen and two females from Ship-y-shan, taken in September.

*Habitat.* CENTRAL CHINA.

### 1563. *Hypena rivuligera.*

*Hypena rivuligera*, Butl., Trans. Ent. Soc. Lond., 1881, p. 579.

Described from Tokio. I have one example which was sent to me by Mr. Manley of Yokohama.

*Habitat.* JAPAN.

### 1564. *Hypena inambitiosa*, sp. n.

Primaries pale brown; ante- and postmedial lines fuscous, the latter obtusely angled above the middle, inwardly shaded with fuscous-brown; discal lunule blackish; submarginal line fuscous, sinuous, obscure. Secondaries pale fuscous. Fringes pale brown, preceded by a fuscous line. Under surface whitish tinged with

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brownish on the primaries; all the wings have a dusky postmedial line, the secondaries have a faint discal lunule.

Expanse 34 millim.

One female specimen taken in July at Kiukiang.

*Habitat.* CENTRAL CHINA.

### 1565. *Hypena* (?) *bipartita*, sp. n.

Basal half of primaries blackish-brown outwardly limited by an incised and dentate pale line; outer marginal half dark fuscous sparsely powdered with grey, submarginal line wavy, rather darker, with some grey scales upon it; stigmata blackish. Secondaries fuliginous with a blackish discal dot. Under surface fuscous, all the wings have a blackish discal dot, and the secondaries have two obscure dark transverse lines.

Expanse 36 millim.

One male specimen received from Mr. Manley of Yokohama.

*Habitat.* JAPAN.

### 1566. *Hypena* (?) *pectinata*, sp. n.

Antennæ bipectinate. Primaries pale pinkish-brown with an abbreviated, sub-basal, brown band; antemedial line curved and recurved towards the inner margin, straight towards the costa; medial line dark brown inwardly shaded with the same, broadly so towards the costa; postmedial line fuscous-brown, slightly wavy, excurved beyond the cell thence running inwards across the medial line beyond which it descends to the inner margin; submarginal line fuscous-brown, double, sinuous, originating in a fuscous-brown cloud on the costal area; there is a dusky dot in the cell and a dusky lunule at the outer extremity of the cell. Secondaries pale fuscous-brown with indications of postmedial and submarginal lines on the abdominal area towards the anal angle. Fringes of the ground-colour preceded by a black line. Under surface pale brown, suffused with fuscous on the primaries; all the wings are tinged with ochreous on the costa and have dark postmedial and submarginal lines, the latter obscure, the secondaries have a dusky discal mark.

Expanse 26 millim.

One male taken at Ship-y-shan in September.

*Habitat.* CENTRAL CHINA.



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### 1567. *Hypena* (?) *simplex*, sp. n.

Primaries light brown with a pale dot at the end of the cell; antemedial line dark brown, wavy and slightly curved, not well defined; postmedial line dark brown, wavy, curving gently round end of the cell, thence oblique to the inner margin; submarginal line indicated by blackish dots. Secondaries pale fuscous. Under surface pale brown suffused with fuscous, especially on the primaries, all the wings have a dusky postmedial line and the secondaries have a blackish discal dot.

Expanse 30 millim.

One female example taken in May at Kiukiang.
*Habitat.* CENTRAL CHINA.

### 1568. *Hypena* (?) *albinotata*.

*Amblygoes albinotata*, Butl., Ann. and Mag. Nat. Hist., (5) iv, p. 449 (1879).

Described from Yokohama, from which locality I have also received specimens.
*Habitat.* JAPAN.

## Genus GYNÆPHILA.

Staudinger, Rom. sur. Lép., vi, p. 629 (1892).

### 1569. *Gynæphila maculifera*.

*Gynæphila maculifera*, Staud., Rom. sur Lép., vi, p. 629, pl. xiv, fig. 13 (1892).

I obtained examples at Shimonoseki and Gensan in July. My collectors met with the species at Wa-shan, Ni-tou, and Moupin, and one specimen was sent to me by Mr. Manley of Yokohama.
*Distribution.* AMURLAND; JAPAN; COREA; WESTERN CHINA.

## Genus BRITHA.

Walk., Cat. Lep. Het., xxxiv, p. 1146 (1865); Hampson, Fauna Brit. Ind., Moths, iii, p. 93 (1895).

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### 1570. *Britha biguttata.*

*Britha biguttata*, Walk., Cat. Lep. Het., xxxiv, p. 1147 (1865); Hampson, Fauna Brit. Ind., Moths, iii, p. 94 (1895).

*Herminia incertalis*, Walk., Cat. Lep. Het., xxxiv, p. 1518 (1865); Hampson, Ill. Typ. Lep. Het., ix, pl. clxvi, fig. 21 (1893).

My collectors did not meet with this species in any part of China that they visited.

*Distribution.* NORTH CHINA; CEYLON; JAVA; AUSTRALIA; NEW BRITAIN (*Hampson*).

## Genus AVENTIOLA.

Staudinger, Rom. sur Lép., vi, p. 602 (1892).

### 1571. *Aventiola pusilla.*

*Egnasia pusilla*, Butl., Ill. Typ. Lep. Het., iii, p. 67, pl. lvii, fig. 9 (1879).

*Aventiola maculifera*, Staud., Rom. sur Lép., vi, p. 602, pl. xiv, fig. 3 (1892).

Described from Yokohama; there were four specimens, probably from the same locality, in Pryer's collection. I obtained three examples at Fushiki in July.

Butler's figure of this species is a very bad one; some of my Japanese examples agree exactly with Staudinger's figure of "*A.*" *maculifera.*

Hampson includes "*Egnasia*" *pusilla* in *Hypenagonia* (Ill. Typ. Lep. Het., ix, p. 122), the type of which is *nigrifascia*, Hampson = "*Acidalia*" *vexataria*, Walk.

*Distribution.* JAPAN; AMURLAND.

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# XIII. *Contributions to a Knowledge of the* Rhynchota.

By W. L. Distant.

[Read November 21st, 1900.]

Plate IX.

## I.

## EASTERN CERCOPIDÆ.

*Cosmoscarta* and *Phymatostetha* are two closely allied genera belonging to the Fam. *Cercopidæ*. In distribution they are Oriental and Australian, being found in and throughout British India, the Malay Peninsula, Malayan Archipelago, Northern Australia, and many of the Pacific Islands. They just enter the Palæarctic region in China, but as far as I am aware are absent from Japan.

Some few years ago, Mr. Doherty, the well-known and accomplished collector, made a natural history expedition throughout India, Burma, Tenasserim, the Malay Peninsula, and many islands of the Malayan Archipelago. With few exceptions his Rhynchotal collections passed into my hands, and a very large number of species belonging to these two genera have remained—owing to one cause and another—unworked to the present time, the new species being now described. I have at the same time gone over the fine collection in the British Museum, and described the nondescripts which have accumulated there during the last few years. Our national collection of these insects is unsurpassed, its chief treasures being the large number of species collected by Mr. Wallace in his memorable visit to the Malayan Archipelago, and originally described by the late Mr. Walker under the genus *Cercopis*. Dr. Butler subsequently revised this work and re-arranged the species—describing many new ones—under the genera proposed for their reception by Dr. Stål, viz. *Cosmoscarta* and *Phymatostetha*. The Museum since that time has received many acquisitions, notably the Indian collection of the late Mr. Atkinson, including the types of the species he had described. Outside our own country, Stål added most



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to our knowledge of these insects, and recently Breddin has contributed to the same.

The latest enumeration of the species is still that of Butler, compiled in 1874 ("Cistula Entomologica," vol. i.). He there included 104 species of *Cosmoscarta* and 22 species of *Phymatostetha*. An approximate estimate would now point to the known species being some 163 species of *Cosmoscarta*, and 28 species of *Phymatostetha*, but it is absolutely certain that our knowledge is still very incomplete, and that the time has scarcely arrived for the formation of a systematic catalogue.

The arrangement of the species is still a matter for individual opinion. Structural, differential, and sectional characters are to be found in the size, shape, and surface of the pronotum and in the conformation of the face, while sternal characters have been used by some describers. Other workers have only, or chiefly, used the tegmina, the colour and markings on which have been employed in a similar manner to the process which obtains in the study of the wings in Lepidoptera. In an evolutionary sense there is much to commend this view, partial as it is from an entomological standpoint. I believe—with diffidence—that the tegmina in *Cosmoscarta* and *Phymatostetha* exhibit in their markings characters of the greatest phylogenetic value, and that they may be used according to the biological method of to-day, which seeks to establish affinities rather than to accentuate differences. I have in the arrangement of my species seen traces of an unicolorous beginning, gradually breaking up into spots, again coalescing in stripes, but I have no theory to formulate, for the process might be reversed. An evolutionist need not be a sectarian, nor need biological suggestions be mistaken for philosophical dogmas.

## Genus COSMOSCARTA.

*Cosmoscarta*, Stål, Ofv. Vet.-Ak. Förh., 1870, p. 718.

### *Cosmoscarta maura*, sp. n.

Body and tegmina piceous; lateral and posterior margins of pronotum, femora, bases of posterior tibiæ, and a small broken discoidal spot to tegmina, ochraceous; wings smoky hyaline.

Pronotum with the lateral margins distinctly reflexed, its surface rugulose and coarsely punctate, its lateral angles subangulately rounded; posterior tibiæ with two strong outer spines, one at apex

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and the other at about one-third from apex; face laterally striate and moderately compressed.

Long. excl. tegm. 10 millim. Exp. tegm. 29 millim.

*Habitat.* BATCHIAN (Doherty—Coll. Dist.).

### *Cosmoscarta butleri*, sp. n.

Head, pronotum, and prosternum brilliant metallic indigo-blue; abdomen, meso- and metasternum, coxæ, and legs sanguineous; tegmina shining piceous with an olivaceous reflection; wings smoky hyaline; abdomen beneath with a central and two lateral series of black spots.

Pronotum very faintly and finely punctate and obscurely pilose, its lateral margins reflexed, and with a central carinate line extending for about half its length from apex, and with two prominent foveate impressions on its anterior area; face compressed and transversely striate; posterior tibiæ with a long and prominent spine about one-third from apex.

Long. excl. tegm. 16 millim. Exp. tegm. 42 millim.

*Habitat.* MALAY PENINSULA, Perak (Doherty—Coll. Dist.).

Allied to *C. funeralis*, Butl.

### *Cosmoscarta sulukensis*, sp. n.

Body and legs pale sanguineous; tegmina with about basal half sanguineous containing a large broad recurved black fasciate spot on disk, and a prominent black claval streak; about posterior half of tegmina black containing two large ochraceous spots—one from costal margin outwardly curved, the other tri-angulated nearly reaching inner margin, the apical area brownish-black; wings pale brownish hyaline.

Pronotum with the lateral margins reflexed, a central carinate line not reaching base, and with two foveate impressions on anterior area, its surface very finely punctate and obscurely pilose; face compressed and transversely striate; posterior tibiæ with a strong spine at about one-third from apex.

Long. excl. tegm. 18 millim. Exp. tegm. 43 millim.

*Habitat.* SULU ISLANDS (Coll. Dist.).

The nearest allied species in my collection is *C. miranda*, Butl.

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*Cosmoscarta obiensis*, sp. n.

Head, pronotum, scutellum, base and apex of abdomen, body beneath and legs ochraceous; abdomen above, mesosternum, and large lateral marginal spots to abdomen beneath, pitchy-black; tegmina black, the base and a much sinuated transverse fascia about centre, ochraceous, two small luteous spots at about one-fourth from apex—the largest near costa, the smaller below centre of disk, apical margin broadly pale brownish; wings pale brownish-hyaline.

Pronotum very finely and thickly punctate, with two foveate impressions near anterior margin, and an elongate foveate impression near each lateral angle, lateral margins reflexed, posterior margin subtruncate, and with a distinct central longitudinal carination; face distinctly centrally sulcate, and very strongly transversely striate; posterior tibiæ with a moderate sized spine at about one-third from apex.

Long. excl. tegm. 14 to 15 millim. Exp. tegm. 32 millim.

*Habitat.* MALAY ARCHIPELAGO, Obi Island (van Renesse, van Duvenborg—Brit. Mus.).

Somewhat allied to *C. miranda*, Butl. In one specimen all the markings to the tegmina are luteous.

*Cosmoscarta naiteara*, sp. n. (Plate IX, fig. 1.)

Head, face, pronotum, scutellum, anterior femora, and bases of anterior and posterior tibiæ ochraceous; two small spots at base of head and inner margins of eyes, two rounded spots on anterior area of pronotum, apical area of scutellum—sometimes its whole surface—body and legs bluish-black; lateral margins of sternum ochraceous; tegmina piceous, the basal third ochraceous with the veins and a transverse spot on discoidal area piceous, a broken inwardly directed macular ochraceous fascia at about one-third from apex; wings smoky hyaline.

*Var. a.* Tegmina with the basal ochraceous area only indicated by outer spots.

*Var. b.* Tegmina nearly wholly ochraceous, apical fourth and two or three discal spots only piceous.

Pronotum gibbous, the lateral and posterior margins reflexed, its surface thickly and finely punctate; face globular only slightly compressed; posterior tibiæ with a strong spine at about one-third from apex which is more obscurely spined.

Long. excl. tegm. 15 to 17 millim. Exp. tegm. 40 to 48 millim.

*Habitat.* BRIT. INDIA, Utakamand (Atkinson Coll.—Brit. Mus.), Malabar (Coll. Dist.).

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### *Cosmoscarta relata*, sp. n.

Head, pronotum, face and lateral margins of prosternum, dull ochraceous; two duplex spots near anterior margins of pronotum, scutellum, abdomen, body beneath and legs dark indigo-blue; anterior legs (excluding femoral bases), and the intermediate tibiæ brownish-ochraceous; tegmina black; a broken claval basal fascia connected with a much angulated transverse fascia crossing tegmina before middle, a basal costal fascia, a discal spot a little beyond base, and an angulated transverse fascia about one-third from apex, which does not reach costal margin, reddish-ochraceous; wings smoky hyaline, strongly sanguineous at base and costal area.

Pronotum finely wrinkled and thickly and finely punctate, margins thickened and reflexed, posterior margin subtruncate; face narrowly centrally sulcate, strongly transversely striate; posterior tibiæ with a strong spine a little beyond middle.

Long. excl. tegm. 15 millim. Exp. tegm. 40 millim.

*Habitat.* BRITISH INDIA, Kawar (Atkinson Coll.—Brit. Mus.).

Allied to *C. naitcara*, Dist.

### *Cosmoscarta roborea*, sp. n. (Plate IX, fig. 2.)

Head, pronotum, scutellum, and sternum shining pitchy-black; abdomen bluish-black; legs castaneous; a large frontal spot to head —extending from between eyes,—lateral margins of pronotum, connected by a transverse fascia between the lateral angles, ochraceous; tegmina pale piceous with an elongate discoidal spot, two spots beneath its near inner margin—the uppermost small, the second curved and elongate—and an inwardly curved transverse fascia crossing tegmina about one-third from apex, ochraceous; wings smoky hyaline.

The pronotum is centrally gibbous with a slender central carination, the lateral margins not prominently reflexed but levigate, the remaining surface rugulose and coarsely punctate; posterior tibiæ with a strong and prominent spine about one-third from apex, and another smaller one at apex.

Long. excl. tegm. 13 to 14 millim. Exp. tegm. 33 to 36 millim.

*Habitat.* MALAY PENINSULA, Perak (Doherty); SUMATRA (Forbes—Coll. Dist.); BORNEO, Pankalan Ampat (Shelford—Coll. Dist. and Sarawak Mus.).

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*Cosmoscarta solivaga*, sp. n. (Plate IX, fig. 3.)

Head, pronotum, scutellum, body beneath and legs shining pitchy-black; abdomen purplish-black; pronotum with the lateral and basal margins—the last very broadly—and a central fascia continued throughout head, where it is broadest, ochraceous; the central fascia is marked with two small lateral piceous spots on disk; tegmina pale ochraceous, base narrowly piceous and with a paler piceous suffusion on costal area for about one-third from apex; wings very pale ochraceous, narrowly piceous at base.

The pronotum is centrally gibbous with the lateral margins distinctly reflexed and somewhat laminately produced, with a slender central carination, and its surface subrugulose and coarsely punctate; posterior tibiæ with a very prominent spine at about one-third from apex, and a shorter spine at apex.

Long. excl. tegm. 14 millim. Exp. tegm. 36 millim.

*Habitat.* BORNEO, Kuching (Shelford—Coll. Dist. and Sarawak Mus.).

Apparently allied to *C. eli*, Bredd.

*Cosmoscarta chersonesia*, sp. n. (Plate IX, fig. 4.)

Body piceous; legs castaneous; a subquadrate spot to head; a discal transverse series of three rounded spots to pronotum, and the lateral margins of scutellum ochraceous; tegmina ochraceous with three elongate spots in claval area, two large spots on disk with a smaller one beneath the outermost, a small lineate spot at about centre of costal margin and the apical fourth of tegmina piceous; wings smoky hyaline with about basal half—not reaching posterior margin—roseate.

Pronotum convexly gibbous, the lateral margins moderately reflexed, its surface very finely and obscurely punctate; face much compressed; posterior legs mutilated.

Long. excl. tegm. 14 millim. Exp. tegm. 35 millim.

*Habitat.* MALAY PENINSULA, Perak (Doherty—Coll. Dist.).

*Cosmoscarta mandaru*, sp. n. (Plate IX, fig. 5.)

Body piceous; legs ochraceous, anterior and intermediate tibiæ castaneous; pronotum with the lateral margins narrowly and the posterior margin very broadly ochraceous; tegmina reddish-ochraceous, with the base, costal margin—narrowly, a subquadrate spot about centre of costal area, a small spot at about centre of inner margin, and about apical fourth of tegmina piceous; wings smoky hyaline.

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Pronotum subrugulose, thickly and finely punctate, its lateral margins moderately reflexed ; face somewhat compressed; posterior tibiæ with a prominent spine about one-third from apex.

Long. excl. tegm. 14 millim. Exp. tegm. 32 millim.

*Habitat.* CELEBES (Coll. Dist.).

Somewhat allied to *C. sulcata,* Walk., from which it differs by the ochraceously margined pronotum, etc.

### *Cosmoscarta militaris,* sp. n.

Head, pronotum, scutellum, face, and lateral margins to prosternum, sanguineous ; legs castaneous, anterior femora reddish ; abdomen above piceous, beneath dark castaneous; pronotum with a short transverse piceous fascia near anterior margin ; tegmina sanguineous with rather less than the apical half black ; wings pale smoky hyaline.

Pronotum thickly and finely punctate, lateral margins strongly reflexed, posterior margin subtruncate, two foveate impressions near anterior margin, an elongate foveate impression near the lateral angles, and with a distinct central carination which is transformed to a sulcation on posterior area ; face with a central impunctate fascia, not sulcated, lateral transverse ridges strong ; posterior tibiæ with a very strong spine a little beyond middle.

Long. excl. tegm. 13 millim. Exp. tegm. 35 millim.

*Habitat.* NEW GUINEA, Charles Lewis Mt. (van Renesse, van Duvenborg—Brit. Mus.).

In markings of tegmina allied to *C. tetragona,* Walk.

### *Cosmoscarta auratilis,* sp. n.

Pronotum black ; head, lateral and posterior margins of pronotum, scutellum, and lateral margins of posternum, ochraceous ; abdomen above and body beneath fuscous ; legs pale brownish; tegmina bright golden-yellow with rather less than the apical half black ; wings pale smoky hyaline.

Pronotum thickly and finely punctate, with a faint central carination, lateral margins prominently reflexed, with two foveate impressions near anterior margin, and an elongate foveate impression near the lateral angles ; face with its central area ochraceous, impunctate, and non-sulcate, the transverse ridges strong ; posterior tibiæ with a very short spine near base, and a robust spine at about one-third from apex.

Long. excl. tegm. 10 millim. Exp. tegm. 30 millim.

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*Habitat.* NEW GUINEA, Charles Lewis Mt. (van Renesse, van Duvenborg—Brit. Mus.).

### *Cosmoscarta whiteheadi*, sp. n.

Head, pronotum, scutellum, lateral margins of sternum, anterior legs, intermediate tibiæ and tarsi, apices of posterior tibiæ and the tarsi, and apex of abdomen, pale bright castaneous; abdomen, body beneath and legs black; tegmina black, costal and apical margins —the first most distinct near base—castaneous; the base, a small discal spot and two small spots—one above the other—before the reticulated apical area, sanguineous; wings pale smoky hyaline.

*Var.* Tegmina with two or three small discal spots, and two subcostal spots, one above the discal, the other above the subapical spots.

Pronotum very finely wrinkled, and thickly and finely punctate, with a central carination, two foveate impressions near anterior margin, and two more elongate ones behind the lateral angles, the lateral margins reflexed, the posterior margin truncate; face with a broad central sulcation, the transverse striation moderately prominent; posterior tibiæ with a short spine near base and a long spine a little beyond middle.

Long. excl. tegm. 12 millim. Exp. tegm. 35 millim.

*Habitat.* PHILIPPINE ISLANDS, Luzon, Cape Engano (Whitehead—Brit. Mus.).

Allied in its varietal forms to *C. sexmaculata*, Stål, from which the colour of the pronotum will, apart from other characters, at once separate it.

### *Cosmoscarta consociata*, sp. n.

Head, pronotum, face, legs, and posterior margin of mesonotum castaneous; scutellum, abdomen and body beneath black; lateral margins of prosternum brownish-ochraceous; tegmina black; posterior margin of clavus for more than half its length, a discal spot about one-third from base, a transverse fascia much attenuated interiorly—at base of reticulated apical area, and the costal margin, ochraceous or reddish-ochraceous; wings pale fuscous hyaline.

Pronotum finely wrinkled and punctate, with a central carination, two foveate impressions near anterior margin and an elongate impression near each lateral angle, margins moderately reflexed, posterior margin concavely sinuate; face centrally ochraceous but

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not sulcate, transverse striations profound; posterior tibiæ with a strong spine a little beyond middle.

Long. excl. tegm. 13 to 14 millim. Exp. tegm. 30 to 32 millim.

*Habitat.* PHILIPPINE ISLANDS, Albay (Whitehead—Brit. Mus.).

Somewhat allied to the preceding species *C. whiteheadi*, but apart from distinct markings differing fundamentally by the concave posterior margin of the pronotum.

*Cosmoscarta demonstrata*, sp. n. (Plate IX, fig. 6.)

Ochraceous; metanotum, base of abdomen above, meso- and metasternum, basal areas of the first, second and third abdominal segments beneath and three large marginal spots on each side, a transverse fascia to tegmina beyond middle preceded by a discoidal spot, black; wings pale hyaline, roseate at base.

Pronotum very broad and convex, the lateral margins and lateral angles distinctly convex, its surface finely wrinkled and obscurely punctate; face strongly compressed; posterior tibiæ with a strong spine about one-third from apex.

Long. excl. tegm. 17 millim. Exp. tegm. 48 millim.

*Habitat.* BORNEO, Matang Mt. 3200 ft. (Shelford—Sarawak Mus. and Coll. Dist.).

*Cosmoscarta mandarina*, sp. n. (Plate IX, fig. 7.)

Head, pronotum, scutellum and sternum bluish-black; legs dull reddish, the tarsi and anterior and intermediate tibiæ piceous; abdomen sanguineous, its base above and a segmental series of transverse fasciæ and lateral spots beneath, bluish-black; tegmina piceous, sanguineous at base and with two transverse ochraceous fasciæ—one at one-third, the second at two-thirds from base—ochraceous; wings smoky hyaline, sanguineous at base.

The pronotum is gibbous with a distinct and somewhat acute foveation on each lateral area, its posterior margin is concavely sinuate, and its margins distinctly reflexed, its surface is thickly and finely punctate, with a distinct central carination; the face is compressed with a broad central non-sulcated levigate fasciate area, its lateral areas deeply striate; posterior tibiæ with a moderate spine at about one-third from apex.

Long. excl. tegm. 14 to 15 millim. Exp. tegm. 29 millim.

*Habitat.* WEST CHINA, Omei (Coll. Dist.).

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### *Cosmoscarta macgillivrayi*, sp. n.

Head, pronotum, scutellum, pro- and mesosternum, and abdomen beneath dark indigo-blue; abdomen beneath with the posterior segmental margins and the apical area ochraceous; two basal lateral fasciæ to scutellum and abdomen above reddish-ochraceous, the last with the discal areas of the second, third, fourth, and fifth segments fuscous; legs fuscous, coxæ, anterior femora—excluding apices—bases of anterior and posterior femora, reddish-ochraceous; tegmina ochraceous, about apical half of clavus, costal margin, central discoidal and apical areas black; a subcostal basal streak, about basal half of clavus, and two angulated transverse fasciæ—the inner not reaching costal margin, the outermost—about one-third from apex—completely crossing, dull sanguineous; wings pale smoky hyaline.

Pronotum obscurely wrinkled and very finely punctate, with a central carination, two foveate impressions near anterior margin, and two deeper longitudinal ones behind the lateral angles, the lateral margins reflexed, the posterior margin truncate; face somewhat obscurely centrally sulcate, the transverse striations moderate; posterior tibiæ with a very small spine near base, and a long spine at about one-third from apex.

Long. excl. tegm. 13 to 15 millim. Exp. tegm. 29 to 32 millim.

*Habitat.* ? (Macgillivray—voyage H.M.S. *Herald*—Brit. Mus.).

No precise habitats are to be found connected with the insects collected during this voyage. The species I have here described is allied to *C. mandarina*, Dist., from China, and it is most probably a Chinese species. The *Herald* made some stay at Hong-kong.

### *Cosmoscarta tennanti*, sp. n.

Head, pronotum, scutellum, face, and lateral margins of prosternum, ochraceous; abdomen above and body beneath bluish-black; legs and apex of abdomen castaneous; tegmina with about basal third ochraceous, remaining area bluish-black, piceous towards apex; at about two-thirds from base are two ochraceous spots one above the other, the uppermost larger and prominently notched.

Pronotum very finely and obscurely punctate, with a central carination which is much more prominent anteriorly, margins moderately reflexed; face moderately compressed, transversely striate, centrally sulcate; posterior tibiæ with a strong spine about one-third from apex.

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Long. excl. tegm. 11 millim. Exp. tegm. 28 millim.

*Habitat.* CEYLON (Coll. Dist.).

### *Cosmoscarta raja*, sp. n.

Head and pronotum indigo-blue, lateral margins of the pronotum reddish-ochraceous; scutellum and abdomen above sanguineous; body beneath and legs sanguineous, anterior and intermediate tarsi piceous; tegmina sanguineous, apical third piceous, sanguineous portion marked with six piceous spots,—three oblique near base, followed by a discal irregularly rounded spot, an outer oblique spot from costa, and a larger spot connected with the posterior margin; wings fuscous hyaline.

Pronotum finely punctate, the lateral margins moderately reflexed, the posterior margin slightly concavely sinuate; face bluish-black above, sanguineous beneath; posterior tibiæ with a strong spine about one-third from apex and a short but distinct spine at apex.

Long. excl. tegm. 9 to 10 millim. Exp. tegm. 22 millim.

*Habitat.* BRIT. INDIA, Upper Assam, Margherita (Doherty—Coll. Dist.).

### *Cosmoscarta ophir*, sp. n. (Plate IX, fig. 8.)

Head, pronotum, scutellum, and margins of prosternum bluish-black; abdomen and body beneath and legs ochraceous; tegmina ochraceous, costal and apical areas—broadly—a discoidal transverse oblique spot connected with costal area, claval margins and apical fourth of tegmina bluish-black, the last with the venation reticulate and ochraceous; wings smoky hyaline.

Pronotum globose, very finely punctate, its margins moderately reflexed, somewhat foveate behind each lateral angle and with a distinct slender central carination; face moderately compressed and laterally strongly carinate; posterior tibiæ with a strong spine about one-third from apex.

Long. excl. tegm. 10 millim. Exp. tegm. 30 millim.

*Habitat.* MALAY PENINSULA, Perak (Ridley—Brit. Mus., Doherty—Coll. Dist.), Singapore (Ridley—Brit. Mus.); SIAM (Flower—Brit. Mus.).

There is a variety of this species in which the dark costal area of the tegmina is very narrow, and the basal ochraceous area possesses two oblique series of small spots.

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*Cosmoscarta scabra*, sp. n.

Head, pronotum, scutellum and sternum dark dull castaneous; lateral margins of sternum, abdomen, and legs reddish-ochraceous; tegmina ochraceous, the apical area densely reticulate and margined with piceous, a small basal discocellular spot, followed by an angulated series of four or five small spots, and again by a slender angulated maculate fascia—crossing tegmina about centre—piceous; wings smoky hyaline.

Head, pronotum, and scutellum coarsely rugose, the pronotum truncate at base and with its lateral margins reflexed; face broadly centrally sulcate; posterior tibiæ with a strong spine at about one-third from apex.

Long. excl. tegm. 14 millim. Exp. tegm. 38 millim.

*Habitat.* MALAY PENINSULA, Perak (Doherty—Coll. Dist.).

This species belongs to the group represented by *C. guttata*, St. F. and S., *C. bipars*, Walk., and *C. ophir*, Dist., from all of which it differs by the strongly rugose pronotum.

*Cosmoscarta horsfieldi*, sp. n.

Head, pronotum, scutellum, apex of abdomen, and lateral margins of prosternum shining metallic bluish-black; ocelli prominent and luteous; sternum brownish, abdomen and legs ochraceous; abdomen beneath with four series of bluish-black spots; tegmina ochraceous, the apical third blackish and widely ochraceously tessellate, base of costal margin and about ten scattered discal spots, blackish.

Tegmina elongate; pronotum small, very obscurely punctate; acutely, elongately and profoundly foveate near the lateral angles, with a distinct central carination, the lateral margins subampliate and strongly reflexed, its posterior margin truncate; face compressed, subangulate; posterior tibiæ with a strong spine at about one-third from apex.

Long. excl. tegm. 8 millim. Exp. tegm. 21 millim.

*Habitat.* JAVA (Horsfield Coll.—Brit. Mus.).

This species belongs to the group represented by *C. guttata*, St. F. and S., and *C. ophir*, Dist. From all these it differs by the elongate tegmina, the small pronotum, and also by the apical portion of the tegmina, in which the reticulated areas are very large and cell-like.

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### *Cosmoscarta ignifera*, sp. n.

Head, pronotum, and scutellum deep dark olivaceous, body beneath and abdomen above bluish-black; basal areas of the abdominal segments above and legs brownish; tarsi piceous; head with a central frontal ochraceous spot extending over base of face; tegmina brownish-ochraceous with seven pale ochraceous spots, two one above the other near base, two similarly placed about one-third from apex, the other three situate between the two series; wings smoky hyaline more or less roseate at base.

Pronotum deeply foveate on each lateral area, its posterior margin subacutely sinuate, its lateral margins slightly reflexed, its surface obscurely and finely punctate, with a posterior central carination; scutellum broadly and deeply foveate at base; face compressed and somewhat angulate at apex; posterior tibiæ with a very long spine about one-third from apex.

Long. excl. tegm. 10 millim. Exp. tegm. 29 millim.

*Habitat.* BORNEO, Kuching (Shelford—Coll. Dist. and Sarawak Museum).

Apart from markings, the structure of this species is very peculiar.

### *Cosmoscarta menaca*, sp. n.

Ochraceous; metanotum, fourth and fifth abdominal segments above and sometimes the base of the third, sternum and basal areas of the segments beneath, piceous; lateral margins of prosternum piceous; tegmina ochraceous, apical fourth densely reticulated, with five black spots—two in clavus and three discal—sometimes with appearance of a sixth before reticulated area, and again sometimes with only one in claval area.

Pronotum dilated on each side, the lateral angles rounded, the posterior margin truncate, the margins reflexed and with a distinct central carination, its surface is very finely wrinkled and punctate; face very prominent and compressed; posterior tibiæ spined at about one-third from apex.

Long. excl. tegm. 15 to 16 millim. Exp. tegm. 40 to 42 millim.

*Habitat.* BRITISH INDIA, Assam (Atkinson Coll.—Brit. Mus.), North Khasia Hills (Chennell—Coll. Dist.); DINDING ISLE (Ridley—Brit. Mus.); BORNEO, Matang Mt., 3200 ft. (Shelford—Sarawak Mus. and Coll. Dist.).

Allied to *C. octopunctata*, Amyot, but differing by the less produced and non-foveate lateral areas of the pronotum.



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margins of prosternum sanguineous; tegmina piceous, with the following sanguineous markings:—a basal claval elongate spot with a smaller costal spot above it, a transverse fascia about one-third from base and three subapical spots; apical margin dull ochraceous; wings smoky hyaline.

Pronotum very finely wrinkled and more finely punctate; lateral margins reflexed; face sulcated on its posterior half; posterior legs mutilated.

Long. excl. tegm. 17 millim. Exp. tegm. 45 millim.

*Habitat.* BRITISH INDIA, Naga Hills (Doherty—Coll. Dist.).

A species allied to *P. dorsivitta*, Walk.

*Phymatostetha flavo-picta*, sp. n.

Head dull red, broadly black at base between the eyes; pronotum black, anterior and lateral margins and a central fascia dull red; scutellum black; abdomen above testaceous, the base, apex, and spiracular spots black; body beneath and legs black; face, lateral margins of prosternum, coxæ, trochanters, extreme bases of femora, posterior tibiæ and tarsi and apices of anterior tibiæ, extreme lateral margins of abdomen, and subapical area dull red; tegmina black with a broad basal and a short subcostal basal fascia, a transverse slightly waved fascia before middle, a very strongly waved and curved fascia about one-third from apex, and a subapical discal spot, dull red, apical margin brownish-ochraceous; wings pale smoky hyaline.

Tegmina thickly and very finely pilose; posterior margin of the pronotum concavely sinuate; posterior tibiæ with a well-developed spine a short distance from base, and a longer spine at about one-fourth before apex; face broad, not sulcated.

Long. excl. tegm. 13 millim. Exp. tegm. 30 to 32 millim.

*Habitat.* PHILIPPINE ISLANDS, Luzon (Whitehead—Brit. Mus.).

Head and pronotum in pattern resembling those of *P. dubitabilis*, Walk., markings of tegmina resembling those of *P. varia*, Walk.

*Phymatostetha sema*, sp. n. (Plate IX, fig. 10.)

Head, pronotum and scutellum piceous; about apical half of head, lateral and anterior margins of pronotum, three elongate discal spots to pronotum—the central one longest—and the central area of scutellum reddish-ochraceous; abdomen above black, lateral spots

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bases and apices of femora, tarsi excluding apices, and a broad central area to posterior tibiæ dull reddish; face and lateral margins of prosternum reddish-ochraceous; tegmina dull brownish-ochraceous, with eight ochraceous spots, of which two are basal—claval and discocellular—three in transverse series about one-third from base, two about two-thirds from base, and one subapical; apical margin paler; wings smoky hyaline, narrowly purplish-red at base.

Pronotum finely wrinkled and obscurely punctate, lateral margins reflexed; face finely longitudinally sulcate; posterior tibiæ with a strong spine near base and a longer spine about centre.

Long. excl. tegm. 17 millim. Exp. tegm. 42 millim.

*Habitat.* BRITISH INDIA, Naga Hills (Doherty—Coll. Dist.).

*Phymatostetha rengma.* (Plate IX, fig. 11.)

Head, pronotum, and scutellum ochraceous; basal area of head, two large anterior spots to pronotum, base and apex of scutellum piceous; body beneath and legs piceous; face and lateral margins of prosternum ochraceous; abdomen above purplish-black, apex and lateral margins ochraceous; tegmina piceous, their apical margins much paler, a claval fascia connected with the costa and an inner costal spot, two discal and a subapical spot ochraceous; wings smoky hyaline.

Pronotum finely wrinkled and somewhat coarsely punctate, the black spots subfoveate, the lateral margins reflexed; face finely and obscurely centrally sulcate; posterior tibiæ with a strong spine near base and a longer spine about centre.

Long. excl. tegm. 16 millim. Exp. tegm. 40 millim.

*Habitat.* BRITISH INDIA, Naga Hills (Doherty—Coll. Dist.).

*Phymatostetha karenia*, sp. n. (Plate IX, fig. 12.)

Head reddish-ochraceous narrowly piceous at base; pronotum pale luteous; scutellum, abdomen above, body beneath and legs bluish-black or piceous; face reddish-ochraceous; margins of prosternum and two spots near anterior coxæ, luteous; tegmina piceous, their apical margins ochraceous, with four luteous spots—two about one-third from base, and two about one-third from apex; wings pale piceous and subhyaline.

Pronotum thickly and finely punctate, with an obscure central

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carination, its lateral margins reflexed; posterior tibiæ with a strong spine near base, and a larger spine a little beyond centre.

Long. excl. tegm. 15 to 16 millim. Exp. tegm. 35 to 43 millim.

*Habitat.* BURMA, Hsipaw (L. de Niceville—Brit. Mus.), Karen Hil's (Doherty—Coll. Dist.).

### *Phymatostetha bracteata*, sp. n.

Head, pronotum, scutellum, and body beneath pitchy-black; abdomen above dark indigo-blue; legs dark castaneous; a broad central longitudinal fascia to head and a transverse discal series of four rounded spots to pronotum, ochraceous; tegmina brownish-ochraceous; wings pale brownish-hyaline.

Pronotum somewhat coarsely punctate and subrugulose, with a central longitudinal carination, its lateral margins reflexed, its posterior margin concavely sinuate; face broad, not sulcate, with two distinct tubercles at apex; posterior femora with a short spine near base and a very strong spine at about one-third from apex.

Long. excl. tegm. 12 millim. Exp. tegm. 32 millim.

*Habitat.* NORTH BORNEO (Atkinson Coll.—Brit. Mus.).

A species without any at present known near ally.

## SYNONYMICAL NOTES.

### *Phymatostetha stålii.*

*Phymatostetha stålii*, Butl., Cist. Ent., vol. i, p. 267, n. 7 (1874).

*Cosmoscarta sikkimensis*, Atkins., Journ. As. Soc. Beng., 1888, p. 335.

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*Cercopis punctifascia*, Walk., Journ. Linn. Soc., vol. x, p. 228, n. 326 (1867).

*Phymatostetha punctifascia*, Butl., Cist. Ent., vol. i, p. 266, n. 2 (1874).

This species belongs to the Subfam. APHROPHORINÆ.

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## II.

## RHYNCHOTA OF CENTRAL AMERICA.

Since I completed my contribution on the Heteroptera to the "Biologia Centrali Americana" in 1893, other species from that large and interesting region have been received, and principally from my friend Prof. P. Biolley in Costa Rica. Some of these were new species and are here described, and I have also added references to species described elsewhere since I completed my allotted task, so as to bring up to date our knowledge of the Central American fauna. I have also added the descriptions of some Homoptera in the families which Canon Fowler has undertaken to describe, and which he has—so far as his material was available—brought to a termination in the same pages. I hope from time to time as material arrives to supplement the vast information already contained in the "Biologia Centrali Americana," which has already secured the position of the greatest faunistic work yet published.

### HETEROPTERA.

### Family PENTATOMIDÆ.

#### Subfamily *SCUTELLERINÆ.*

#### *Orsilochus bajulans,* sp. n.

Ochraceous; head, antennæ, two anterior discal stripes to pronotum connected anteriorly and with a small spot on each side, basal angles of the scutellum, a transverse spot on disk, and the whole apical third, head beneath, rostrum, a central fascia to sternum, and the abdomen castaneous.

Head hirsute, the apex of the central lobe moderately projecting; antennæ pilose, the second and third joints subequal in length, fourth and fifth also subequal, incrassate and moderately spatulate; apex of scutellun subtruncate.

Long. 8 millim.

*Habitat.* COSTA RICA, San José, 1161 m. (P. Biolley).

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Subfamily *CYDNINÆ*.

*Scaptocoris talpa.*

*Scaptocoris talpa*, Champ., Ent. Month. Mag., ser. 2, vol. xi, p. 256 (1900).

*Habitat.* GUATEMALA, Capetillo (Rodriguez).

In some introductory notes to his description Mr. Champion refers to "two species standing under the name *S. castaneus*, Perty, in the British Museum, one of them, from South America, being no doubt correctly named." These specimens are all from South America, the identifications being by Dallas originally, and subsequently by Walker, who added specimens collected by Bates. There are certainly more than one species thus included, but as neither Mr. Champion nor myself can with certainty distinguish the typical *S. castaneus*, Perty, the specimens are left in the national collection as arranged by Dallas and Walker till further knowledge is obtainable, a course I venture to think wise under the circumstances.

*Ectinopus opacus*, sp. n.

Closely allied to *E. holomelas*, Burm., from which it differs by its opaque coloration, the antennæ and rostrum pale castaneous, the membrane dark brownish-ochraceous with the basal and other margins distinctly paler.

In structure the apex of the scutellum is distinctly narrower and more acutely angulate and the discal punctures are also more profound.

Long. 14 millim. Exp. pronot. ang. 6½ to 7 millim.

*Habitat.* COSTA RICA, Helechales (H. Pittier).

Subfamily *PENTATOMINÆ*.

*Lincus discessus*, sp. n.

Piceous or very dark castaneous; bases (narrowly) of the antennal joints, apices of pronotal angles, and a discal spot on corium, ochraceous; rostrum and legs pale castaneous.

Head strongly excavated between the projecting lateral lobes; antennæ with the second and third and fourth and fifth joints almost subequal in length; pronotum and scutellum rugulose, apex of scutellum with the apical margins piceous and the extreme apex

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ochraceous; connexivum piceous with very faint and obscure ochraceous markings.

Long. ♀ 11 millim. Exp. pronot. ang. 5 millim.

*Habitat.* COSTA RICA, Bruschik (Talamanca), Atlantic Slopes (H. Pittier).

Allied to *L. rufospilotus*, Westw., from which it differs by having the anterior angles of the pronotum shorter and broader, by the narrower and more elongate body, narrower apex of the scutellum, etc.

### *Brochymena cuspidata*, sp. n.

Brownish-ochraceous, head, pronotum, and base of scutellum darkest; apical two-thirds of scutellum pale ochraceous, sparingly, coarsely and darkly punctate, with an obscure small dark spot on each lateral margin about one-third from apex which is marked with an elongate spot; corium ochraceous much marked and mottled with brownish and with a small discal ochraceous spot; membrane greyish spotted and mottled with brownish; body beneath and legs ochraceous; head beneath, sternal margins, punctures and irregular lateral spots to abdomen, femora excluding bases and a spot near apex, tibiæ with three annulations above and two beneath, piceous; rostrum reaching the third abdominal segment, with its apex black; antennæ piceous with the base of apical joint pale luteous.

Head with the lateral lobes very slightly longer than the central; pronotum with the lateral margins armed with some very stout prominent spines, the lateral angles acutely produced; base of scutellum gibbous and with a central carinate elevation; margins of abdomen strongly produced, the connexivum spotted and punctured with piceous; membrane extending considerably beyond the apex of the abdomen.

Long. ♀ 16 millim; exp. pronot. ang. 8 millim.; max. abd. lat. 10 millim.

*Habitat.* COSTA RICA, San José, 1161 m. (P. Biolley).

A species at once recognized by the acutely spined lateral angles of the pronotum.

### *Padæus bovillus*, sp. n.

Dark castaneous-brown, thickly and coarsely punctate; pronotum and scutellum rugulose; body beneath and legs ochraceous, legs spotted with black; antennæ piceous, inner margin of basal joint and bases of third and fourth joints luteous; (apical joint mutilated).

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their apices slightly recurved ; scutellum with some small ochraceous spots at basal margin.

Long. 11 millim. Exp. pronot. ang. 8½ millim.

*Habitat.* COSTA RICA, Tuis, Atlantic Slopes (P. Biolley).

A species in pronotal structure resembling a highly developed *Sibaria armata*, Dall.

*Murgantia bifasciata.*

*Pentatoma bifasciata*, Herr.-Schäff., Wanz. Ins., iii, p. 96, f. 321 (1836).
*Pentatoma bifasciata*, Westw. in Hope Cat., i, p. 37 (1837).
*Strachia bifasciata*, Dall., List Hem., i, p. 263, 17 (1851).
*Murgantia bifasciata*, Stål, En. Hem., ii, p. 37, 2 (1872).

*Habitat.* COSTA RICA, Tuis, Atlantic Slopes, 650 m. (P. Biolley) ; BRAZIL.

## Family COREIDÆ.

### Subfamily *MICTINÆ.*

*Melucha biolleyi.*

*Melucha biolleyi*, Dist., Ann. and Mag. Nat. Hist., ser. 7, vol. vi, p. 374 (1900).

*Habitat.* COSTA RICA, Turrialba, Atlantic Slopes (P. Biolley).

*Mozena alata.*

*Mozena alata*, Dist., Ann. and Mag. Nat. Hist., ser. 7, vol. vi, p. 375 (1900).

*Habitat.* COSTA RICA, Tuis, Atlantic Slopes (P. Biolley).

*Bardistus superbus.*

*Bardistus superbus*, Dist., Ann. and Mag. Nat. Hist., ser. 7, vol. ii, p. 135 (1898).

*Habitat.* COSTA RICA, Guaitil de Pirris, Pacific Coast (P. Biolley).

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Subfamily *ACANTHOCEPHALINÆ.*

*Acanthocephala pittieri.*

*Acanthocephala pittieri*, Montand, Ann. Soc. Ent. Fr., 1895, p. 7, pl. 1, f. 2.

*Habitat.* COSTA RICA.

Subfamily *COREINÆ.*

Division ANISOSCELARIA.

*Leptoglossus oppositus.*

*Anisoscelis oppositus*, Say, New Harm. Ind. Dec. 1831; Comp. Writ., i, p. 327, 3 (1859).
*Anisoscelis tibialis*, Herr.-Schäff., Wanz. Ins., vii, p. 12 (1844).
*Leptoglossus oppositus*, Stål, En. Hem., i, p. 163, 11 (1870).

*Habitat.* MEXICO, Orizaba (Coll. Dist.); NORTH AMERICA, Georgia, Texas (Mus. Holm.).

Division COREARIA.

*Anasa perfusa*, sp. n.

Ochraceous, somewhat thickly punctured with black; head ochraceous, impunctate, with two central fasciæ and the lateral margins black, the ocelli red; pronotum with a central levigate line, the anterior area impunctate, more or less clothed with short black hairs, and with two prominent central black spots, the lateral areas impunctate, with a black submarginal line not reaching the anterior margin; scutellum with a prominent black spot near the basal angles which with the apex are levigate; corium with two-thirds of its lateral margin from base levigate ochraceous; membrane cupreous; connexivum ochraceous with small black spots at the incisures; body beneath ochraceous tinged with purplish; rostrum, a central spot to head and one behind eyes, two rounded and a lineate spot on each side of prosternum, an anterior marginal line and two rounded spots on each side of mesosternum, a spot on each side of metasternum, bases of coxæ, two central fasciæ to mesosternum, two central spots on second and third abdominal segments, lateral spots on the fourth, fifth and sixth segments, and the stigmata black; a sublateral series of abdominal spots and the lateral margins to sternum and abdomen

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ochraceous, the last with black spots at the apices of the incisures; legs dark castaneous.

Antennæ dark castaneous, basal joints hirsute, much thicker and a little shorter than the second joint—remaining joints mutilated—scutellum transversely rugulose; rostrum not quite reaching the intermediate coxæ.

Long. 15 millim. Exp. pronot. ang. 5 millim.

*Habitat.* COSTA RICA, San José, 1161 m. (P. Biolley).

Allied to *A. andresii*, Guér., but shorter, broader, differently marked, etc.

### *Paryphes perpictus*, sp. n.

Head, pronotum and scutellum dark ochraceous; corium black, its outer margin—narrowly—and its posterior margin and claval margin—broadly—ochraceous; membrane black; body beneath and legs shining olivaceous-green, head and lateral margins of sternum dark ochraceous; lateral margins of abdomen and posterior segmental margins luteous.

The pronotal angles are expanded but directed upwardly, their margins broadly rounded with the edges crenulate; the antennæ are piceous with the first, second and third joints almost subequal in length with the fourth a little longest; rostrum reaching the intermediate coxæ.

Long. 22 millim. Exp. pronot. ang. 7 millim.

*Habitat.* COSTA RICA, Sipurio (Talamanca), Atlantic Slopes (H. Pittier).

## Family PYRRHOCORIDÆ.

### *Theraneis oleosa*, sp. n.

Luteous; head, antennæ, anterior lobe of pronotum, and basal margin of posterior lobe, scutellum, inner margin of clavus, a large rounded fasciate spot at centre of corium, membrane, sternum, rostrum, legs, a large submacular lateral fascia and last three segments of the abdomen—excluding the lateral margins—black; the lateral margins of the anterior pronotal lobe and the angles of the posterior lobe luteous.

Antennæ with the first and fourth joints longest and subequal in length, second and third shortest, second longer than third; above sparingly but coarsely punctate; posterior lobe of pronotum moderately gibbous; head distinctly excavated between the eyes.

Long. 11 millim.

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*Habitat.* COSTA RICA, Mokri (Talamanca), Atlantic Slopes (H. Pittier).

## HOMOPTERA.

### Family CERCOPIDÆ.

#### *Sphenorhina biolleyi*, sp. n.

Head, pronotum, body beneath and legs, piceous; ocelli, lateral and posterior margins of pronotum, lateral margins and apex of scutellum, tegmina, lateral margins of sternum, and posterior margins of metasternum, reddish-ochraceous; tegmina with an apical cluster of about eleven or twelve black spots visible both above and beneath; wings smoky hyaline.

Head transversely foveate between the eyes; pronotum thickly and coarsely punctate; tegmina very finely but thickly greyishly pilose; face produced beneath into an angulated point with a central linear carination.

Long. cum. tegm. 10 millim.

*Habitat.* COSTA RICA, La Laguna (Chemin de Carrillo), Atlantic Slopes, 1000 m. (P. Biolley).

Allied to *S. plagiata*, Dist.

#### *Sphenorhina quota*, sp. n.

Head—above and beneath—thorax, scutellum, tegmina, and lateral margins of sternum pale dull sanguineous; body beneath and legs piceous; tegmina with the lateral and apical margins somewhat paler and brighter, and with three reddish-ochraceous spots—one in basal and two in the apical area.

Head transversely foveate in front of eyes; pronotum with the lateral margins reflexed and with two calli on the anterior area, its surface thickly and coarsely punctate; tegmina finely but thickly greyishly pilose; face beneath produced in a well-developed apically angulated point.

Long. cum. tegm. 13 millim.

*Habitat.* COSTA RICA, La Laguna (Chemin de Carrillo), Atlantic Slopes, 1000 m. (P. Biolley).

Allied to *S. perfecta*, Walk.

#### *Sphenorhina perfecta.*

*Sphenorhina perfecta*, Walk., Ins. Saund., p. 90 (1858).[1]

*Habitat.* COSTA RICA, Las Delicias (St. Clara), Atlantic Slopes, 250 m. (P. Biolley); [1]SOUTH AMERICA (*sic*).



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*Sphenorhina costaricensis.*

*Sphenorhina costaricensis*, Dist., Ent. Month. Mag., xvi, p. 61 (1879).
*Tomaspis quatuordecim-notata*, Fowler, Biol. Centr. Amer. Homop., ii, p. 177, tab. xi, fig. 5 (1897).
*Tomaspis costaricensis*, Fowler, *loc. cit.*, p. 206 (1898).

## Family MEMBRACIDÆ.

*Adippe maculata.*

*Adippe maculata*, Dist., Ent. Month. Mag., xvi, p. 11 (1879).

*Habitat.* COSTA RICA, Irazu, 6000 to 7000 feet (Rogers); La Laguna (Chemin de Carrillo), Atlantic Slopes (Biolley).

Canon Fowler has identified and figured a specimen as belonging to my species, and has then indulged in some criticism on my description. This is unfortunate, as two specimens forwarded to me by Prof. Biolley exactly correspond with the description I gave of the Costa Rican type, examined by Fowler and pronounced a "poor example." He also writes, "Mr. Distant is also wrong with regard to the tegmina which he describes as 'black, with a large hyaline spot a little before the apex;' they are large and hyaline, etc." I am happy to be in a position to affirm the correctness of my description of the tegmina, and I feel little doubt as to the specimen figured by Fowler not being even a variety of the species, the description of which, I regret, has apparently given him so much dissatisfaction.

*Adippe hæretica*, sp. n.

*Adippe maculata*, Fowler (*nec* Dist.), Biol. Centr. Amer., Rhyn. Hom., vol. ii, p. 134, tab. viii, figs. 15, 15a (1896).

*Habitat.* NICARAGUA, Chontales (Janson); PANAMA, Volcan de Chiriqui, 2500 to 6000 feet (Champion).

*Polyglypta godmani.*

*Polyglypta godmani*, Dist., Ent. Month. Mag., xvi, p. 11 (1879).
*Polyglypta costata*, Fowler (part.), Biol. Centr. Amer., Rhyn. Hom., vol. ii, p. 122, 1 (1896).

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*Habitat.* COSTA RICA, Irazu, 6000 to 7000 feet (Rogers); San José, 1161 m. (Biolley).

*Hyphinoe proclivis*, sp. n.

Ochraceous, thickly and coarsely punctured. Apices of the humeral horns continued in a broad lateral fascia to the humeral margins, apex of pronotum and the tegmina dark castaneous or black. Legs ochraceous, tibiæ sulcated and pilose. The humeral horns are well developed, their apices obtuse and moderately directed upwardly; the lateral pronotal margins are narrowly levigate and pale ochraceous; the apex of the pronotum about reaches the apex of tegmina.

Long. cum. tegm. 14 millim. Exp. pronot. ang. 8 millim.

*Habitat.* COSTA RICA, Bruschik (Talamanca), Atlantic Slopes (H. Pittier).

Allied to *H. cornuta*, Dist., but differing by the longer pronotum, the more diverging humeral horns, the absence of the spots to pronotum, etc.

*Hyphinoe thoracata*, sp. n.

Ochraceous; the area between the humeral horns, the dorsal area and apex to the pronotum, and a lateral fascia from the apices of the humeral horns to the humeral margins, dark castaneous or black; tegmina and legs brownish-ochraceous.

Anterior and discal area of pronotum somewhat thickly and finely punctate, lateral areas of pronotum much more coarsely and sparingly punctate; humeral angles robust, scarcely directed upwards or forwards; apex of pronotum not reaching apex of tegmina.

Long. pronot. 12 millim. Long. cum. tegm. 14 millim. Exp. pronot. ang. 7½ millim.

*Habitat.* COSTA RICA, Guaitil de Pirris, Pacific Slopes (P. Biolley).

A species also allied to *H. cornuta*, Dist., and the preceding species.

## III.

## HETEROPTERA FROM BORNEO.

In addition to the species of *Cercopidæ* described in the first part of this paper, I also received, amongst some other specimens sent to me for identification from the Sarawak Museum, the following nondescripts.

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## HETEROPTERA.

### Family PENTATOMIDÆ.

#### Subfamily *ASOPINÆ*.

*Platynopus borneensis*, sp.

Bright shining metallic olivaceous-green; anterior lateral margins, and two small central spots to anterior area of pronotum, a large spot near each basal angle and the apex (broadly) of the scutellum, a small obscure spot at apex of corium, and a large spot on each lateral margin of membrane, ochraceous; eyes, antennæ, pronotal spines and membrane piceous; corium purplish-brown with its lateral margins olivaceous; body beneath and legs ochraceous, the marginal areas olivaceous, containing a segmental series of ochraceous spots; abdominal segments with some broken transverse castaneous fasciæ.

Antennæ with the second joint about equal in length to the third, fourth and fifth longest and subequal; head coarsely punctate and transversely wrinkled, its lateral margins distinctly reflexed; pronotum sparingly and very coarsely punctate, the lateral angles longly and acutely produced, their apices slightly recurved; scutellum excluding the levigate spots coarsely but sparingly punctate; corium thickly and finely punctate; membrane extending considerably beyond the apex of the abdomen.

Long. 12 to 14 millim. Exp. pronot. ang. 8 to 9 millim.

*Habitat.* BORNEO, S. E. Districts (Doherty—Coll. Dist.); Pampat (Shelford—Sarawak Mus.).

Allied to *P. lætus*, Walk., and differing structurally by the apices of the pronotal spines which are not notched as in Walker's species.

#### Subfamily *TESSARATOMINÆ*.

*Pygoplatys montanus*, sp. n.

Brownish-ochraceous; head, anterior area and spines to pronotum and connexivum pale castaneous; antennæ, body beneath and legs pale ochraceous, stigmatal spots distinctly darker.

Body broad, oblong, scarcely narrowed at apex; antennæ stout, second joint slightly longer than the third, third and fourth subequal in length, fourth with the basal area fuscous; head wrinkled and coarsely punctate; pronotum sparingly but very coarsely punctate from the area of the pronotal angles to apex, posterior area finely and obscurely punctate, lateral angles robust, very coarsely punctate,

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directed a little forwardly; scutellum sparingly punctate, its apex sulcate; corium very thickly and finely punctate; connexivum projecting beyond corium from about one-third of its base, very coarsely punctate, its apex angularly truncate.

Long. 22 millim. Exp. pronot. angl. 15 millim.

*Habitat.* BORNEO, Matang Mt., 3200 feet (Shelford—Sarawak Mus. and Coll. Dist.).

The colour of the legs and antennæ is a superficial character by which to distinguish this species.

## Family COREIDÆ.

### Subfamily *DALADERINÆ.*

### *Dalader shelfordi*, sp. n.

Brownish-ochraceous; antennæ stramineous, the basal joint and dilated portion of the third joint piceous; femora dark castaneous, tibiæ and tarsi stramineous; membrane cupreous, piceous at base.

Antennæ with the basal joint a little longer than the second, third joint convexly dilated on each side from a little beyond base. General shape and form of *D. planiventris*, Westw., pronotal angles narrower, colour of legs and antennæ very distinct.

Long. 24 millim. Exp. pronot. angl. 10 millim.

*Habitat.* BORNEO, Kuching (Shelford—Sarawak Mus. and Coll. Dist.).

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## EXPLANATION OF PLATE IX.

[*See explanation facing the* PLATE.]

DECEMBER 24, 1900.

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# ENTOMOLOGICAL SOCIETY OF LONDON.

## Founded, 1833. Incorporated by Royal Charter, 1885.

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## *NOTICE TO AUTHORS, etc.*

*Authors of papers which are intended to be communicated to the Society, are requested to be good enough to send their names and the full titles of their papers to the Secretaries at least fourteen days prior to the date of the Meeting at which it is proposed that such papers shall be read; and such communications may be addressed to the Secretaries at the Society's Rooms,* 11 *Chandos Street, Cavendish Square, W., or to* H. ROWLAND-BROWN, *Oxhey Grove, Harrow Weald.*

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## NOTICE.

All persons exhibiting specimens at Meetings of the Society are requested to be good enough to hand to the Secretary, **at the Meeting**, a note in writing of the generic and specific names of all specimens exhibited, together with the names of the localities in which such specimens were obtained, and any remarks thereon which the exhibitors have to make. In the absence of such a note in writing the Secretary will not be responsible for any errors in connexion with his report of such exhibitions, or for the entire omission of any reference thereto in the Proceedings.

BY ORDER OF THE COUNCIL.

# THE ANNUAL MEETING

OF THE

# ENTOMOLOGICAL SOCIETY OF LONDON

WILL BE HELD AT

11, CHANDOS STREET, CAVENDISH SQUARE, W.,

On WEDNESDAY, the 16th JANUARY, 1901.

The Chair will be taken at EIGHT o'clock in the evening precisely.

**Any Fellow wishing to pay his Annual Subscriptions through his Bankers, can obtain the Official Form of Bankers' order by applying to the Treasurer or Resident Librarian.**

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THE

# TRANSACTIONS

OF THE

# ENTOMOLOGICAL SOCIETY

OF

# LONDON

FOR THE YEAR

## 1900.

PART V.

*WITH ONE PLATE.*

(April 19, 1901.)

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THE

# PROCEEDINGS

OF THE

# ENTOMOLOGICAL SOCIETY

OF

# LONDON

## FOR THE YEAR 1900.

---

## February 7th, 1900.

Mr. GEORGE H. VERRALL, President, in the Chair.

*Nomination of Vice-Presidents.*

The President announced that he had appointed Dr. THOMAS A. CHAPMAN, F.Z.S., Mr. WILLIAM L. DISTANT, and Mr. CHARLES O. WATERHOUSE as Vice-Presidents for the Session.

He then announced, with regret, the death of Mr. WILLIAM BLUNDELL SPENCE, who had been a Member of the Society since its foundation in 1833, and who was for some years past the only surviving Original Member.

*Election of a Fellow.*

Mrs. M. DE LA B. NICHOLL, of Merthyr Mawr, Bridgend, was elected a Fellow of the Society.

*Exhibitions.*

Mr. O. E. JANSON exhibited examples of *Achias longividens*, Walk., a remarkable fly from New Guinea, in which the eyes are set at the end of very long stalk-like processes. The specimens showed great variation in the length of the eye-stalks, which in the most fully developed males considerably exceeded the length of the wings.

Mr. J. W. TUTT exhibited a series of specimens of *Epunda lutulenta*, collected by the Rev. Mr. Burrows, at Mucking in Essex. It included those remarkable variations to which Mr. Tutt had referred in his notes on the species, read at a previous meeting.



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Mr. CHAMPION exhibited a large number of Coleoptera collected by Dr. Chapman, Mr. Edwards and himself in July last, at Fusio in the Val Maggia, Macugnaga in the Val Anzasca, and on the Simplon Pass. He called attention to the great variation in colour of one or two common species of the Chrysomelid genus *Orina*, and said he believed that these forms, which were known as *O. cacaliæ*, Schrank, *O. speciosissima*, Scop., and under other names, all belonged to one extremely variable species.

Prof. T. HUDSON BEARE showed specimens of *Dinoderus minutus*, Fab., obtained from bamboo-furniture in his house at Richmond. They were the specimens referred to by Mr. Donisthorpe, in a Paper in the Entomologist's Record, as being specifically identical with the *Dinoderus substriatus* of Stephens.

Mr. H. DONISTHORPE exhibited a larva-case of *Clythra quadripunctata* taken from a nest of the red wood-ant—*Formica rufa*. He commented upon the unsatisfactory state of our knowledge as to the food-habits of the larvæ of *Clythra*, and said it was stated the larvæ fed upon the eggs of the ant, though some observers considered them to be aphidivorous, while others thought that pollen was their natural food.

The PRESIDENT remarked that there was a species of *Microdon*, of which the pupa-case had an obvious similarity to the larva-case of *Clythra*, and was, he believed, found in the nest of the same species of ant.

Mr. GAHAN mentioned as an interesting fact, not previously recorded, in connection with the genus *Clythra*, that these beetles possess a stridulating organ on the meso-notum, not along the middle as in Longicorns and Megalopidæ, but towards the lateral edges, and consisting of two widely separated striated areas over which the edge of the pronotum moves. The stridulating areas were present, he said, in nearly all the genera of Clythridæ, and might almost be regarded as a characteristic of the family. The fact that these beetles stridulate was apparently known to Darwin, who, in the "Descent of Man," erroneously stated that the stridulating area was situated on the pygidium.

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## March 7th, 1900.

Mr. G. H. VERRALL, President, in the Chair.

*Election of Secretary.*

Mr. H. ROWLAND-BROWN, M.A., was elected into the Council and as joint-Secretary in the place of Mr. J. J. Walker, R.N., who had resigned.

*Election of Fellows.*

Prof. CHRISTOPHER AURIVILLIUS, of Stockholm; and Prof. FREDERICK MORITZ BRAUER, of Vienna, were elected Honorary Fellows: and Mr. W. D. DRURY, of Rocquaine, West Hill Park, Woking; the Rev. W. WESTROPP FLEMYNG, of Coolfin, Portlaw, Waterford; and Prof. PERCY GROOM, M.A., F.L.S., of the Royal Indian Engineering College, Cooper's Hill, were elected ordinary Fellows of the Society.

*Exhibitions.*

Mr. C. G. BARRETT exhibited a series of varieties of *Spilosoma dorsalis* from South Africa, showing variation in some degree parallel with that of *S. lubricipeda* in Great Britain.

Mr. G. W. KIRKALDY exhibited several Rhynchota of economic interest, from the United States, Ceylon, and British Central Africa, among them being the new *Ægaleus bechuana*, Kirk., from Africa, which attacks coffee, and *Parlatoria victrix*, Ckll., from Phœnix, Arizona, found on date palms. The last-named Coccid was originally introduced from Egypt, and all attempts at eradication had hitherto failed. He also showed a series of thirteen colour-varieties of the oriental Scutellerine *Cantao ocellatus* (Thunb.), and examples of *Distantidea vedda* (a new genus and species of *Lybantinæ*) from Ceylon, in which the rostrum was very long, extending as far as to the apex of the abdomen.

*Papers.*

Papers were communicated by Mr. W. L. DISTANT on "Undescribed genera and species belonging to the Rhynchotal family *Pentatomidæ*," and by Mr. G. J. ARROW "On Pleurostict Lamellicorns from Grenada and St. Vincent (West Indies)." Mr. C. J. GAHAN read a paper on "Stridulating organs in Coleoptera," in which he remarked that one of the best accounts of them was to be found in "The Descent of Man,"

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but since that work was written several additional instances of their occurrence had been made known, showing that these organs were less uniform in structure and even more wonderfully diversified in position than Darwin considered them to be; while their discovery in the larvæ of certain forms would lead to some modification of the view that they have originated in connexion with sex and primarily serve the purpose of attracting the sexes to one another. He gave a detailed account of their presence on the head, prothorax, mesothorax, legs, abdomen and elytra, enumerating several genera of *Tenebrionidæ*, *Endomychidæ*, *Hispidæ*, etc., in which they had not previously been known to occur, and describing those of certain *Hispidæ* as being the most complex in structure. He mentioned additional instances in which they occur in one sex only, or differ according to sex, and pointed out that, contrary to Landois' opinion, they are frequently present in both sexes of *Curculionidæ*, but in several species the striated area occupies a different position in each sex, being found on the elytra in the males and on the last dorsal segment in the females.

---

## March 21st, 1900.

Mr. C. O. Waterhouse, Vice-President, in the Chair.

*Election of Fellows.*

Mr. R. T. Cassal, of Ashby near Doncaster; Mr. Neville Chamberlain, of Highbury, Moor Green, near Birmingham; Mr. E. A. Elliott, of 41, Holland Park, W.; Mr. H. Willoughby Ellis, of Knowle, Warwickshire; Mr. J. H. Keys, of 6, Seymour Terrace, Lipson, Plymouth; The Rev. W. J. Leigh Phillips, M.A., of The Cottage, Parkwood Road, Tavistock, Devon; Mr. H. W. Shepheard-Walwyn, M.A., of Glensyde, Ridborough, near Tunbridge Wells; and Mr. C. J. Watkins, of Kings Mill House, Painswick, Gloucestershire, were elected Fellows of the Society.

*Exhibitions.*

Mr. R. McLachlan exhibited an extraordinary aberration of *Enallagma cyathigerum*, Charp, taken by Mr. Morton at

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Glen Lochay, Scotland: the remarkable feature consisted in the predominance of black over blue in the coloration of the abdomen.

Mr. M. Burr exhibited a macropterous var. of *Xiphidium dorsale*, Latr., captured by Mr. Harwood near Clacton, remarking that the fact of this species presenting a macropterous form was apparently unrecorded hitherto.

Mr. W. J. Kaye exhibited *Nyssia hispidaria*, an asymmetrical specimen taken on Wimbledon Common, the left forewing of which was perfectly developed but extremely small, and the left hindwing slightly more elongated than the right hindwing.

Mr. C. O. Waterhouse exhibited a tube which formed the entrance to a nest of a *Trigona*, sent from Singapore by Mr. H. N. Ridley. It was about 15 inches in length, of a resinous substance, but more waxy toward the end, which was spoon-shaped. He also exhibited a portion of the resinous mass formed within the trees by these bees, and stated that one of these masses sent from Penang by Mr. Ridley weighed 15 lbs. The true nest of the *Trigona* consists of an irregular mass of cells filled with honey, quite distinct from the resinous formation.

*Paper.*

A paper was communicated by Mr. W. H. Ashmead, Assistant-Curator of the U. S. Nat. Hist. Museum, on "The Aculeate Hymenoptera of the Islands of St. Vincent and Grenada, with additions to the Parasitic Hymenoptera, and a List of the described Hymenoptera of the West Indies."

---

## April 4th, 1900.

Mr. G. H. Verrall, President, in the Chair.

*Election of Fellows.*

Mr. J. W. Carter, of 25, Glenholme Road, Manningham, Bradford; Mr. L. L. Feltham of Johannesburg, South Africa; and Mr. H. Fortescue Fryer, of The Priory, Chatteris, Cambs., were elected Fellows of the Society.

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*Exhibitions.*

Mr. M. JACOBY exhibited specimens of the genus *Sagra* from Eastern Asia.

Mr. M. BURR exhibited three species of *Pseudophyllidæ*, two new species of *Capnoptera* (females), and *Capnoptera quadrimaculata*, Westw. (female), collected in the Siamese Malay States, by Mr. N. Annandale. One of the specimens illustrated the peculiar methods of offence adopted by the insect when alarmed. Between the head and the pronotum a scarlet hood was visible, the inflation of which bladder-like organ always indicates fear or anger. The other specimens showed the natural position of the head and pronotum.

*Paper.*

Mr. H. J. ELWES communicated a paper on "Bulgarian Lepidoptera," and made some remarks on the more notable species which he had taken in the Balkan Peninsula during the months of June and July 1899. The number of species of *Rhopalocera* captured was 120, which, with a further 20 recorded by Lederer, brings up the total to 140. The mountains visited were an extension of the Rhodope range where the climate was particularly rainy, a number of ferns flourishing everywhere, in contrast to the drier Balkans. Some interesting new forms and varieties were encountered. A variety of *Colias myrmidone* occurred much larger and brighter than the Austrian, and more nearly agreeing with the Ural, form; and whereas in Austria the white aberration is exceedingly rare, in this locality it predominated. Meanwhile the orange forms clearly resembled *Colias heldreichi*. The form of *Cœnonympha tiphon* met with showed an affinity with the Asiatic and not the European form, being almost precisely similar to specimens taken in the mountains of Armenia by Haberhauer. The form of *Argynnis pales* was intermediate between that found in Greece and the central European Alps, while a form of *Erebia* was taken similar to the Pyrenean *E. gorgone*—a curious instance of interrupted distribution.

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## May 2nd, 1900.

Mr. W. L. Distant, Vice-President, in the Chair.

*Election of a Fellow.*

Mr. A. A. Dalglish, of 21, Prince's Street, Glasgow, was elected a Fellow of the Society.

*Exhibitions.*

Mr. W. L. Distant exhibited the cocoon, measuring nearly three and a half inches each way, of a Coprid beetle—probably belonging to the genus *Heliocopris*—found at Pretoria in the Transvaal.

The Rev. Theodore Wood exhibited a specimen of *Carabus auratus*, L., taken in either June or September 1898 by Mr. Ferrand, of Littlefield House, Exmouth, on the Haldon Hills in the neighbourhood of that town.

Mr. McLachlan exhibited an example of *Rhinocyphea fulgidipennis*, Guérin, a brilliant little dragon-fly of the sub-family *Calopteryginæ*, a native of Cochin China, which, so far as he knew, had not been captured since prior to 1830. It had been in M. Guérin's hands, and Mr. McLachlan had received it from M. René Oberthür.

Mr. T. A. Chapman exhibited various specimens illustrating *Acanthopsyche opacella;* fresh females showing the six nearly complete rings of silky wool with which she is clothed; specimens preserved *in cop.*, showing the exact position of the male moth in the female case, and the position of the two moths in relation to the female pupa case. It was incidentally mentioned that the inflation of the male abdomen with air was observed to be the main force employed in advancing the male abdomen into position, and that observation of the immature wing threw considerable light on the real neuration in this species.

Mr. Barrett exhibited specimens of Heterocera destructive to the fruit crops of South Africa. Among them *Sphingomorpha monteironis*, Butl., known as the Fruit Moth in Cape Colony —a bold and powerful insect, with a sucking tongue strong enough to pierce the sound skin of a peach or fig. The presence of a light does not appear to disturb it, so that examination of

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does not take advantage of the natural opening into a fig, or of a crack or other injury to a peach, but deliberately pierces a hole, which afterwards shows as a small round spot, from which decay invariably results. It seems a matter of indifference to the moth whether the fruit has fallen, or is on the tree, ripe or unripe. With regard to *Achæa lienardi* and *Serrodes inara*, the two species are restless and timid, and therefore more difficult to observe. In the present season, however, both have been extremely abundant, and have been seen at apparently uninjured fruit, so that it seems they are capable of equal destruction, and this is the more probable, as all the species alike are provided with somewhat saw-like teeth toward the tip of each section of the sucking apparatus. Several others, feeding mainly on damaged fruit, were also taken with the aforesaid species, among them several new to science, and recently described by Sir George Hampson. They included *Pseudophia tirrhœa*, Cr., *Ophiusa melicerta*, Drury, *O. mormoides*, Walker, *Ophiusa griseimargo*, Hampson, *O. selenaris*, Hampson, *Dysgona faber*, Holt, *Ericeia unangulata*, Gn., *Homoptera glaucinans*, Gn., *H. edusina*, *Pandesma umbrina*, *P. fugitiva*, *Trigonodes obstans*, *Audea ochripennis*, *Dordura tegulata*, Hampson, *D. retracta*, Hampson, *Hybocala deflorata*, *Deva natalensis*, *Oresia argyrosigma* and var. *provocans*, *O. emarginata*, *Agrotis segetum*, *A. munda*, *A. spinifera*, *A. amatura*, *A. decipiens*, *A. rimosa*, *Noctua atrosignata*, *Axylia interstriata*, Hampson, *Gonites sabulifera*, *Cosmophila erosa* and var. *xanthyndyna*, *Leucania interciliata*, Hampson, *L. albovitta*, Hampson, *L. monosticta*, Hampson, *L. rhabdophora*, Hampson, *L. tacuna*, Feld., *L. amens*, *L. torrentium*, *L. loryi*, *Laphygma exigua*, *L. orbicularis*, and *Eulaphygma abyssinia*.

Mr. Jacoby exhibited *Callomorpha wahlbergi* from Africa and *Spilopyra sumptuosa* from Australia.

*Paper.*

A paper was communicated on "New Palæarctic Pyralidæ" by Sir George F. Hampson, Bart.

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## June 6th, 1900.

Mr. G. H. VERRALL, President, in the Chair.

*Election of Fellows.*

Mr. HEDWORTH FOULKES, B.Sc., of The College, Reading; and the Rev. H. C. LANG, M.D., of All Saints' Vicarage, Southend-on-Sea, were elected Fellows of the Society.

*Exhibitions.*

Mr. G. H. VERRALL exhibited a species of the genus *Ceratitis*, MacLeay, apparently identical with Bigot's *C. penicillatus* from the Gold Coast (W. Africa). Mr. Claude Fuller, State Entomologist for the Department of Agriculture, Natal, writes of this as "one of our greatest local pests which is responsible for the destruction of tons of fruit; the larvæ infest apples, apricots, peaches, plums, oranges, mangos, guavas, and I have reared them from the berries of *Solanum giganteum*." Mr. VERRALL also exhibited a very handsome Trypetid reared from the fruit of *Mimusops caffra* by Mr. Fuller at Durban.

Mr. C. O. WATERHOUSE exhibited specimens of a Hemipteron, *Aspongopus nepalensis*, received from Capt. Gorman, I.M.S., who states that they are found under stones in the dry river-beds of Assam. They are much sought after by the natives, who use them for food pounded up and mixed with rice.

Mr. MERRIFIELD exhibited a number of pupæ of *Aporia cratægi*, and called attention to the want of correspondence between the markings on the pupal and those on the imaginal wing. On the latter, as is well known, there are no spots, only darkened nervures, the darkness spreading out a little on the outer margin, but on the former there are black spots, some of them forming an oblique black row across the wing, a series of black marginal spots and no darkened nervures; and, when the imago is about to emerge, so that its markings show through the transparent pupal wing, it is seen that its nervures run between the black marginal spots on the pupal wing, which in no way correspond with the broadening out of the marginal terminations of the dark nervures on the imaginal wings.



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There is great variety in the black markings on the pupal wing; in some they are few and small, in others they expand and unite so that more than half the wing is black. The ground-colour of the pupa varies from bright greenish-yellow to whitish-grey. As might be expected of an insect whose larva pupates by preference on stems screened by foliage, its colour is not very greatly affected by its surroundings. On comparing some which had had yellow or orange surroundings with others which had had dark ones, it was shown that the former tended to yellow ground-colour, and the latter to grey, having also an increase of the dark spots with which the thorax and abdomen are thickly strewn.

Mr. MERRIFIELD also exhibited some enlarged coloured photographs of the green and dark forms of *Papilio machaon*, obtained by causing the larvæ to pupate on green, yellow or orange surfaces, and on dark ones respectively. In answer to Mr. JACOBY he stated that though, when the pupa first appeared, it was always of the green form, it had also, if it was going to be a dark one, from the moment of its appearance a few very minute subdorsal and sublateral dark spots, and a little darkening of the anal end. The darkening began to spread in an hour or two, and at an ordinary temperature was complete in much less than 24 hours. Whether the pupa was to be green or dark was determined by the surroundings to which it had been exposed before it had cast off the larval skin, and if it was going to be a dark one, the dark colouring came on exactly the same in complete darkness as in light.

Sir G. F. HAMPSON exhibited specimens of a moth belonging to the subfamily *Hydrocamprinæ* of the *Pyralidæ*: *Oligostigma arœalis*, Hampson, from Ceylon, where his correspondent, Mr. J. Pole, had met with a swarm on an island in a river which he estimated at 20,000. When disturbed the buzz made by their wings was quite audible, and after three waves of the net 236 specimens were bottled from round its edges, the net still appearing quite full; as in the some 30 specimens sent the sexes were in almost even proportions, this was not a case of male assemblage. He also exhibited cleared wings, showing the neuration of *Diacrisia russula*, *Tyria jacobææ*, *Callimorpha hera* and *C. dominula*, the two former being typical

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*Arctiadæ* and agreeing with the definition of that family in the costal vein of the hind-wing anastomosing with the subcostal to half the length of the cell, whilst in the two latter and also in the eight or ten other known species from the oriental region the costal vein does not anastomose with the subcostal but only connects with it at a point. He contended that the genus *Callimorpha* should therefore be removed from the *Arctiadæ* and placed in the *Hypsidæ*, where it is closely allied to *Nyctemera*, *Callarctia* and other genera, and that the fully developed proboscis, the non-pectinate antennæ, the smoother scaling, the more diurnal habit, and the larvæ being scantily clothed with hair all bore out the correctness of this association.

Dr. CHAPMAN exhibited a portion of a stem of *Ferula communis* from Ile St. Marguerite, near Cannes, showing pupa cases of *Lozopera francillonana*. The larva feeds in the flower-heads and seeds, and burrows into the stem for hibernation. It does so anywhere, but in the majority of cases under the protection of the great sheathing petioles at the lower joints. As many as 30 or 40 and even 50 holes of entry may often be counted immediately above one node. When the larva pierces the stem it is full grown, and the entry holes are as large as or larger than those of exit. Dr. CHAPMAN doubted whether it eats any of the material when it is freshest at the date of entry. The burrows in the stem are full of bitten but undigested material.

These burrows proceed in all directions, but most frequently upwards, for several inches, often as much as eight or ten inches, and then approach the surface, and the burrowing appears to go on all winter. In February and March larvæ may be found that have not completed their burrows. On completion the burrow approaches the surface, and the opening is of full calibre, but a delicate film of tissue is left to be ruptured by the emerging pupa.

On the specimen exhibited about a dozen empty pupa cases protruded, and it was noticeable that they all faced downwards. This was in a sense accidental. The larva burrowing upwards makes the final portion of the burrow curved. The pupa, as in most *Tortrices*, is also curved when extended, and so when

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extruded, continues the curve of the burrow. As this curve is upwards inside the stem, horizontal at the surface of the stem, it becomes downwards if continued outside. One pupa case just below the node was not so correctly oriented, whilst in other specimens a pupa emerging below the node and therefore from a downward burrow, faced and curved upwards. A number of vacant holes were also visible, being the exit of an ichneumon, which affects a large majority of the Tortrix. The species was believed to be *Chelonus inanitus*, Nees. The heads of several dead ones that failed to emerge successfully were to be seen at some of the holes. Dr. CHAPMAN said he had placed a black circle round four holes as prepared by the larva of the Tortrix for emergence, that were still intact, and in two of these it was to be noted that the diaphragm was, as he had described, the cuticular tissue of the plant; in the two others, however, this had been damaged, and here the larva had made a silken diaphragm fortified with chips of the stem tissue. In the neighbourhood of the node especially the holes of entry were to be seen packed tightly with frass, which appeared to be uneaten material. At the extremities of the specimen, which was too short to contain the whole of the individuals that entered at this node, the larvæ had burrowed in the stem.

Mr. F. ENOCK exhibited living specimens of male and female *Ranatra linearis*, Linn., from Epping, together with the peculiar forked eggs, which he had observed laid by the *Ranatra*, as it rested upon the upper surface of the leaf grasping the edges with its claws. The short anterior legs are held well up close together, in a line with the body, the head raised about an inch from the leaf, while the tip of the abdomen and ovipositor is pressed against the leaf—a downward and forward movement being given. The ovipositor is thus forced through the leaf, then partially withdrawn and the egg extruded and forced into the hole as far as the forked filaments, which prevent it from going right through the leaf. The eggs are frequently laid in the half-decayed stems of aquatic plants. The peculiar *Prestwichia aquatica*, Lubbock, has been bred from the eggs of *Ranatra*.

Mr. H. K. DONISTHORPE exhibited a larval case of *Clythra*

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*quadripunctata* from the nest of *Formica rufa*, and a case fastened to a piece of wood in the nest containing pupæ; larva and pupa cases in spirit, removed from cases, an empty case fastened to a twig showing how the beetle escapes, and the perfect insect.

He also exhibited *Lomechusa strumosa* with its host *Formica sanguinea* sent by Father Wasmann from Holland, the insects mounted in the position assumed by the guest and host when the former is being fed by the latter, and *Cossyphodes bewickii*, Woll., a beetle from Cape Colony, with ants with which it is found—*Pheidola megacephala*, var. *punctulata*, Mayr. The beetle is a good example of the protected guests.

Mr. C. G. Barrett exhibited two females of *Spilosoma mendica* reared by Mr. J. E. Robson, of Hartlepool, tinged with purplish-pink, and ordinary specimens of the same for contrast.

*Papers.*

A paper was communicated on "Life histories in the Hepialid group of Lepidoptera" by Mr. Ambrose Quail, and "A note on the habits and structure of *Acanthopsyche opacella*, H.-Sch.," by Dr. T. A. Chapman.

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## October 3rd, 1900.

Mr. G. H. Verrall, President, in the Chair.

*Election of Fellows.*

Mr. E. A. C. Studd, of Oxton, Exeter; Mr. H. Maxwell Lefroy, B.A., Economic Entomologist to the Imperial Agricultural Department for the West Indies, of Barbadoes; and Mr. W. F. Urwick, of 34, Great Tower Street, London, E.C., were elected Fellows of the Society.

*Exhibitions.*

Mr. G. C. Champion exhibited specimens of *Trogophlœus anglicanus*, Sharp, found by Mr. Keys at Plymouth; *Pachyta sexmaculata*, L., found by Col. Yerbury at Nethy Bridge, and *Anchomenus quadripunctatus*, De Geer, found by himself at Woking.

Mr. M. Jacoby exhibited an ichneumon, *Rhyssa pusicatoria*, taken by him at Blandford, parasitic on *Sirex*, and Col.

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YERBURY said that he had met with the same species in some numbers in Scotland. One female observed in the act of oviposition had thrust her ovipositor which is about the consistency of a human hair through an inch of fir trunk.

Col. YERBURY exhibited:—(1) a rare sawfly *Xyphidria camelus* taken in Scotland this year at Nethy Bridge. The species is mentioned in the old books as extinct in the United Kingdom, and Mr. WATERHOUSE said there were no modern specimens in the Natural History Museum collection; (2) rare diptera from Scotland including (a) *Laphria flava*, two males from Nethy Bridge; (b) *Chamæsyophus scævoides*, new to the fauna of Great Britain, from the Mound, Sutherland, where it was common on Umbelliferæ under fir trees in a damp wood, one female also being taken on the path up Cairngorm near Glenmore Lodge; (c) *Microdon devius;* (d) *Chilosia chrysocoma* at mountain-ash blossom, Nethy Bridge; and (e) *Stomphastica flava*, two males from Golspie, September 1900.

Mr. H. K. DONISTHORPE exhibited (1) a specimen of *Drusilla canaliculata* with the dead body of a *Myrmica* in its mouth captured at Chiddingfold on July 17; (2) Specimens of *Myrmedonia collaris* and its larva taken in Wicken Fen with *M. lævinodis* in August 1900.

The Rev. F. D. MORICE exhibited a remarkable hermaphrodite of the bee *Podalirius* (=*Anthophora*) *retusus*, in which the male characters were confined to the left side of the head and genitalia, the right side of the thorax and the abdominal segments. The antennæ and hind (pollinigerous) legs were those of a female, and the genitalia half of each sex.

Dr. CHAPMAN exhibited beetles of the genus *Orina*, and remarked on the fact that while some were viviparous others were oviparous, in some cases of the former the larvæ being developed in the oviducts.

Mr. H. J. ELWES exhibited a collection of lepidoptera from Greece, taken this season in conjunction with Miss Fountaine in the Morea, and in the Parnassus region. He remarked that the country about Athens was much dried up and overrun with goats and herds, and that therefore the lepidopterous fauna there was poor. On the south side of the Gulf of Corinth, however, the *Pieridi* were well represented, and out of eight

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together—an unusual occurrence, possibly due to the rainy spring. Among other notable species albinos of *Colias heldreichi* (female) were taken, *G. rhamni*, var. *farinosa*, and *Lycæna ottomanus*, while Mr. ELWES further expressed his opinion that a Lycæna taken as a var. of *L. semiargus* was a distinct species.

Miss FOUNTAINE mentioned in connection with these exhibits that *Colias heldreichi* swarmed on Mount Chelmos from 4000 to 7000 feet; and Mr. Elwes remarked that Miss Fountaine was the first British collector known to have captured this insect.

Mr. H. H. MAY exhibited a variety of *Strenia clathrata* taken on the South Downs, in which the ground-colour of the wings was of a uniform dark chocolate brown, not unlike *Syrichthus alveolus* on the wing.

Mr. F. ENOCK exhibited a male bee *Stelis aterrima*, one of the bees parasitic in the nests of *Osmia fulviventris*, usually considered a rare insect. The specimen was taken on August 14, 1900, in a garden at Holloway. Mr. ENOCK announced that he had also taken *O. fulviventris*, its host, in the same metropolitan locality.

*Papers.*

Papers were communicated entitled "Descriptions of new species and a new genus of South American Eumolpidæ with remarks on some of the genera," by Mr. M. JACOBY, and "Lepidoptera Heterocera from Northern China, Japan, and Corea" (Part IV), by Mr. J. H. LEECH, B.A., F.Z.S., etc.

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## October 17th, 1900.

Mr. G. H. VERRALL, President, in the Chair.

*Election of Fellow.*

Mr. J. DIGBY FIRTH, of The Grammar School, Chorlton-cum-Hardy, near Manchester, was elected a Fellow of the Society.

*Exhibitions.*

Mr. A. H. JONES exhibited a series of *Pararge maera*, a light form resembling *P. megæra* from the Basses Alpes and the Cévennes; a dark form approaching *P. hiera* from Cortina;

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and an intermediate form from the Italian Lakes; also a variety of *Lycæna corydon*, female, in which the under wing showed a decided blue coloration, taken at Lago di Loppio near Riva. Dr. CHAPMAN suggested that the affinity between the three named species of *Pararge* was very close, if the species were not indeed identical.

Mr. A. J. SCOLLICK exhibited a specimen of *Cethosia cyanea*, a species inhabiting India and the Malayan region, which had been taken this year on the wing near Norwich. It was suggested by Mr. DISTANT that this was a case of accidental importation, probably in the pupal condition.

Mr. H. ROWLAND-BROWN exhibited specimens of *Erebia glacialis*, taken this year on the Stelvio pass, showing transitional forms to the var. *alecto*. He said that the typical form and the variety were not found flying together, but on opposite sides of the valley. Dr. Chapman observed that the darker specimens approached to the form at first supposed to be *E. melas* found in the neighbourhood of Campiglio. Specimens of *E. glacialis* also exhibited from Saas Fée and Evolena showed marked inferiority in size and brilliancy of colour.

Mr. W. L. DISTANT exhibited a piece of Hawkesbury sandstone from Australia, showing the borings of Termites, and in connection with the same communicated a note from the Proceedings of the Linnæan Society of New South Wales (Pt. III, 1899, p. 418), as follows :—

"Mr. D. G. Stead exhibited specimens of Hawkesbury sandstone (1) From the sea-shore between tide marks showing the tunnelling of Marine Isopods (*Sphaeroma*) with the living animals *in situ*; and (2) from the hill-tops overlooking Port Jackson, offering examples of the borings which so often attract notice and the production of which has been attributed to Hymenoptera, and also to the Termites. Since last meeting Mr. Stead reported that he had investigated the matter and that, after breaking up a quantity of stone, he had come upon Termites, of a species at present undetermined, actually at work, of these he exhibited specimens."

Mr. M. BURR exhibited a male and female specimen of *Anisolabis colossea*, Dohrn., from New South Wales—the largest known earwig in the world.

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## November 7th, 1900.

Mr. G. H. VERRALL, President, in the Chair.

*Election of Fellows.*

Dr. JOHN COTTON, of 126, Prescot Road, St. Helen's; Mr. GEORGE H. HOWES, of Spey Street, Invercargill, New Zealand; the Hon. F. M. MACKWOOD, M.I.C., of Colombo, Ceylon; Mr. WILLIAM J. RAINBOW, of the Australian Museum, Sydney; and Mr. PERCY CHARLES REID, of Feering Bury, Kelvedon, Essex, were elected Fellows of the Society.

*Exhibitions, etc.*

Mr. GEORGE S. SAUNDERS exhibited specimens, from Devonshire, of *Pieris rapæ* and *Plusia gamma* caught by the proboscis in flowers of *Araujia albens*, Don., a climbing plant of the natural order *Asclepiadaceæ*; and explained the nature of the mechanism by means of which the insects were entrapped by the flowers. He also showed specimens of the "bedeguar" gall formed apparently on the "hips," or fruit, of *Rosa canina*. They were taken from a small briar about four feet high, having more than 30 of these galls, which was growing on the top of the North Downs near Reigate. The formation of the galls on the hips was considered to be unusual.

Mr. GAHAN remarked that the statement met with in some text-books to the effect that insects were only captured by *Araujia albens* in countries where this plant was introduced and not in its native country, was wrong. The specimens exhibited by Mr. Janson at a meeting of the Society last year came from Buenos Ayres, one of its native places. The subject had recently been investigated in France by MM. Marchand and Bonjour, who gave an account of it in the "Bulletin de la Soc. des Sciences Nat. de l'Ouest de la France," for 1899. These authors concluded that insects were captured only by immature flowers, the anther-wings, in the cleft between which the proboscis of the insect is caught, being at that time stiff and resistant; but when the flowers are ripe the anther-wings become less rigid and do not offer sufficient resistance to the withdrawal of the proboscis, which carries with it the pollinia

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ready to be transferred to the stigma of the next flower visited by the insect.

Mr. J. W. TUTT exhibited a series of 184 specimens of *Epunda lutulenta* taken this season at Mucking in Essex, by the Rev. C. R. N. BURROWS. He said these Essex specimens showed practically all the recorded aberrations of the species, even those which so far have been taken only in Scotland and Ireland, except that the blackest forms are not quite so glossy black nor the grey forms so slaty. The grey forms were few in number—only 7 per cent. out of three seasons' collection, and the exceedingly dark forms—ab. *luneburgensis*, Frey.,—only 2 per cent. Twenty-five per cent. of the females had pale hind-wings, and rather more than 28 per cent. of the males had the dark row of spots upon the nervures of the hind-wing which is given by Freyer as a distinctive mark of ab. *luneburgensis*. The flight of *lutulenta* appeared to be very brief. In 1899, and again this season, the species was met with only during a period of seventeen days from its first appearance. The first fall of rain seems to destroy the insects, and however abundant they may be before the rain, only one or two are to be found afterwards.

On behalf of Mr. WATKINS of Painswick, Mr. TUTT exhibited a Noctuid bred in Gloucestershire from a larva which was taken from a banana supposed to have come from the West Indies.

Mr. W. J. KAYE exhibited a female specimen of *Hydrocampa stagnalis*, var., with examples of the typical form for comparison; the variety differed in having the basal line nearly obsolete, the sub-median double line much strengthened internally and reduced externally, and the cross band connecting the sub-median and post-median bands almost entirely obliterated.

Mr. F. MERRIFIELD exhibited a variety of *Argynnis dia* taken with a few examples of the ordinary form at Ilanz in the Vorder Rhein valley early in September last, when what was, he believed, a third brood of this species was abundant; the variety was much blackened on the basal half of all the wings.

Canon FOWLER exhibited a specimen of *Orochares angustatus*,

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Erichs., a Staphylinid beetle new to the British list, taken at Leverstock Green, Herts, by Mr. Albert Piffard.

The Rev. F. D. MORICE mentioned, as a fact of some interest, that in a nest of *Formica sanguinea* at Weybridge, in which he found males and workers of that species, he found also males and females as well as workers of the slave-ant *Formica fusca*, an experience somewhat different to that of Huber and Darwin, who stated that workers only, and never males nor fertile females, of the slave species were found in the nests of *F. sanguinea*.

The Secretary read the following paper, communicated by Mr. H. L. L. FELTHAM, of Stellenberg, near Cape Town, and exhibited one female and two male specimens of the dark variety referred to in it. Mr. Feltham requested that these specimens should be handed over to Dr. Butler to be placed in the British Museum collection.

## Notes on Variations of *Zeritis thysbe*, Linn.

By H. L. L. FELTHAM.

"Mr. Roland Trimen in his 'South African Butterflies,' vol. ii, p. 182, describes two specimens which he refers to under the heading 'Aberration ♂—Habitat, Cape Town,' in dealing with the above-named species. One of the specimens, taken in 1868 (?), is a very much battered one, now in the collection of the South African Museum, and gives little idea of the real splendour of this form; the other specimen, taken in the year 1865, is the subject of a note, and has been figured in P.Z.S. Lond., 1868, p. 223, pl. xvii, f. 5, and judging only by the plate, is a good specimen.

"This butterfly has not since been recorded at the S. A. Museum, nor have I found any mention elsewhere of its subsequent appearance. A note of its capture in some numbers may therefore not be without interest.

"During the summer of 1899—1900 I succeeded in taking 44 specimens of the ♂ aberration within a very restricted area of about an acre upon the summit of the mountains overlooking Minzenberg and forming part of the chain of mountains which extend along the Cape Peninsula from Table Mountain to Cape Point. Late in the same season one was

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on some occasions accompanied by females, distinguishable from those of typical *thysbe* by their smaller size, broader black hind-marginal band and larger spots above; the underside markings being much the same in all respects as those of the ordinary female. Of these females 11 were secured.

"No specimens of ordinary *thysbe* were taken or seen anywhere upon Minzenberg mountain, or nearer than the Sand Hills upon the Flats about a mile from the foot of the mountain (where there is a well-known haunt of ordinary *thysbe*). The ♂ aberration taken on Simonstown mountain was however flying among ordinary *thysbe* (of which 10 were taken).

"Subjoined are the particulars of capture of the aberration extracted from my field-book:—

| | |
|---|---|
| 22 Oct. 1889 | 1 ♂ (two others seen). |
| 5 Nov. ,, | 16 ♂ examples. |
| 23 ,, ,, | 13 ♂, 4 ♀ ,, |
| 4 Dec. ,, | 3 ♂, 1 ♀ ,, |
| 1 Jan. 1900 | saw 1 ♂, took 1 ♀ example. |
| 1 Feb. ,, | 6 ♂, 1 ♀ example. |
| 23 ,, ,, | 5 ♂, 4 ♀ ,, |
| 4 March ,, | saw and examined 1 ♂ and 1 ♀; took neither. |
| 10 April ,, | 1 ♂ (Simonstown Mtn.; among ordinary *thysbe*). |

"Several subsequent visits were paid to Minzenberg Mountain, but no more were seen, the weather having become cold and rainy and winter having set in.

"From the specimens taken it appears that the aberration itself varies considerably. For in several specimens the broad apical and hind-marginal patch of the fore-wing is not wholly black but there are small spots of the ordinary orange ground-colour showing; these spots are irregular in shape and ill-defined at the edges, varying in number in different individuals from two to six; the spots are in some cases represented by a few orange scales only; in others they are conspicuous and disposed in two rows: two spots in an outer transverse row

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near the apex, and four in an inner transverse row close behind the former, so arranged that the intervening black colour occupies the same relative positions as the black spots and black nervules of ordinary *thysbe*; these last-mentioned specimens being thus intermediate between the ordinary ♂ and the aberration with the all-black tip described by Mr. Trimen.

"The hind-marginal border of orange-colour in the hind-wing also varies considerably in width and extent, the portion towards the costa being sometimes wanting altogether, sometimes represented by a spot or two of orange; and the band itself being sometimes continuous and sometimes divided by crossing black lines on the nervules.

"In some instances the brilliant 'shot' blue reflection extends over the orange band almost to the hind marginal border. Freshly emerged specimens were taken at different times during the season from Oct. 22, 1899, to the 23rd of the following February, so that it would appear that this dark variety was not confined to one brood or one part of the season.

"The facts above-mentioned seem to justify us in regarding this mountain form as a distinct dark variety rather than an accidental 'sport.'

"During the same season, whilst in pursuit of the ordinary *Z. thysbe* on the Sand Hills near Minzenberg at about sea-level, I found in the same locality as *thysbe*, four specimens —one ♂, 3 ♀, which exhibit a different variation, somewhat in the direction of *Z. osbecki*. The white spots, so conspicuous on the costa and on all the fringes of ordinary *thysbe*, are entirely absent, whilst on the underside of the hind-wing the markings are very faint indeed, almost obsolete, and the silver colouring of the *lituræ* entirely absent or only appearing (in one specimen) in a few faint scales, and the whole of the hind-wing and apex of the fore-wing look as if they had been well painted over with a soft clay-coloured wash which had almost obliterated all the usual markings, the faint lines only remaining distinguishable. The tint of this colouring approximates closely to that on the underside of the hind-wing in pale specimens of *Z. pyrois*. This variation was taken quite at

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3 April, 1900, the other two ♀ ♀ on 18 April, 1900—all in fresh plumage. This variation is not represented in the S. A. Museum collection, and it appears to be new."

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## November 21st, 1900.

Mr. G. H. Verrall, President, in the Chair.

*Election of Fellows.*

Mr. H. Wood, of the Old Grammar School, Ashford, Kent, and Herr J. Moser, of 90, Bulow Strasse, Berlin, were elected Fellows of the Society.

*Exhibitions.*

Mr. H. W. Andrews exhibited *Atherix crassipes*, Mg., a Dipteron new to the British list, taken near Ticehurst, Sussex. Mr. Verrall remarked that the species was but little known on the Continent, and quite unexpected in England. Originally described in 1820, there was no record of its re-occurrence until 1864, and there have been only one or two slight references to it since. He added that it was a most distinct species, and, like *Leptis*, was addicted to settling upon the leaves of alder.

Col. Yerbury exhibited (a) *Anthrax paniscus*, bred from a lepidopterous pupa found in sand at St. Helen's, Isle of Wight, by Mr. Holland, Hope Museum, Oxford. Pupa found 7th July, 1899, fly emerged 12th of the same month. Schiner records *Anthrax* as being parasitic in the larvæ and pupæ of Lepidoptera and Hymenoptera. Dr. Sharp states that M. Künckel d'Herculais bred *Anthrax fenestralis* (*fenestrata*?) from the egg-case of a large locust, *Ocnerodes*, sp. He also exhibited (b) *Tabanus bromius*—pupa found as above, emerged 12th July, 1899, observing that *Tabanus* is generally supposed to breed in wet mud round the margin of pools—and (c) a new species of *Cordyluva*, of which five males and five females were taken at Aviemore in July 1899, and further specimens again in abundance in the same place June 1900. Col. Yerbury mentioned also that he had sent some of them

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to Herr Th. Becker in Silesia, in the hope that the species would have received ere now a distinctive name.

Mr. L. B. Prout exhibited three male specimens of *Proutia betulina*, *Z.*, and two of *P. eppingella*, Tutt, bred from larvæ taken this season in Epping Forest. He remarked that both species occurred in the same part of the forest, and the larvæ appeared to be attached chiefly to old hawthorns. Excepting in the smaller size of *P. eppingella*, no superficial difference was observable between the two species. The specimens of *P. betulina*, however, emerged about ten days earlier, the dates being July 5th, 8th and 9th, while *P. eppingella* appeared between July 14th and 21st.

Dr. Chapman said that, accepting provisionally Mr. Tutt's name of *eppingella* for the last species, as a way of avoiding the difficulty of determining whether it be the *salicolella* of Bruand or his *anicanella*, which seems more probable, or a distinct species, he might call attention to the fact that he knew of no other British males of the species, except one previously bred by Mr. Prout and one of unknown locality in Dr. Mason's collection. It is at once distinguishable from *P. betulina* by the numerous joints to the antennæ (27 instead of 21–24, 24 instead of 18–21, if only the joints visible by their pectination outside the head clothing be counted), which are nevertheless shorter, and by the shortness of the anterior tibiæ (·21 mm. instead of ·29 mm.), as well as by the less difficult characters of the colour, size, form of wing, etc.

Dr. Chapman said that Mr. Merrifield had called attention at a recent meeting of the society to the difference in the wing markings in the pupa and in the imago of *Aporia cratægi*, and exhibited some specimens of considerable interest in relation to the question of correspondence or otherwise of pupal and imaginal wings, viz. the imaginal wings of *Aporia cratægi* removed from the pupa at a certain stage of their development.

The specimens showed that at this particular stage the imaginal wings presented the markings of the pupal wing, a set of markings which are in a way the reverse of those of the mature imago. The specimens also showed that this stage was one when the imaginal wing was still so immature that it was

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almost impossible to handle it without producing injury and distortion. Though the markings were there, they were not produced by pigmentation, at least not by formed pigment. The dark markings of the pupal wings were represented by areas that were more transparent than the rest of the wing.

The fact, he remarked, was curious enough whatever might be its minute anatomy and precise meaning.

The pigmentation of dark areas, Dr. CHAPMAN remarked, is usually the latest to develop, and here we have apparently a less development in the dark area than on the pale; and this may be therefore a reminiscence of an ancestor that possessed these dark markings as an imago. He very much doubted this, however, partly because of the great variability of these dark pupal markings, and partly because there was no question of pigment involved. Specimens of the wings at a later stage, showed the true imaginal markings developed. The white pigment was well developed, while the dark markings were still very transparent, little pigment being yet developed on them. The solidity and firmness of these specimens showed how much later they are than the others. With regard to these effects, Dr. CHAPMAN explained them to some extent as analogous to photographic effects. It was quite possible, he thought, that light and heat caused a differential effect through the different coloured areas of the pupa.

Another specimen exhibited, Dr. CHAPMAN thought, might throw some light on the question of supernumerary joints and limbs in insects. He had, he said, in this connection made several hundred experiments upon *Porthetria dispar* last summer, but of these had as yet only examined about a dozen, one of them being the specimen exhibited. The larval limb in this case, by some mistake, had not been cleanly amputated, but partially crushed. This was done at the last larval moult, and also probably so immediately after the moult that the parts had not yet fully expanded, still less hardened, resulting, as the specimen showed, in their remaining only partially expanded. The result in the imago was a limb in which all the parts were abnormal, even the trochanter, whilst the femur was curiously flattened out triangularly, bearing on one angle an

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unquestionable tibia and tarsus, and on the other a member that was no doubt an abortive tibia, since it bore at least one short spur.

*Papers.*

The following papers were communicated: "Contributions to a Knowledge of the Rhynchota," by Mr. W. L. DISTANT, and "An Account of a Collection of Rhopalocera made at Zomba, British Central Africa," by Mr. P. T. LATHY.

At the close of the meeting the President requested the Society to send in names for election to the Council for the forthcoming year, and mentioned that it was most desirable for the Council to have the assistance of country as well as town members.

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## December 5th, 1900.

Mr. G. H. VERRALL, President, in the Chair.

*Exhibitions.*

Mr. JACOBY exhibited specimens of *Hypocephalus armatus* from Bahia and *Chrysomela salisburiensis*, a new species, from Mashonaland.

Mr. BOWER exhibited a specimen of *Spilosoma montanum*, an Asiatic species, bred from a larva found at the beginning of September 1897, feeding on birch on a moor near Paisley. The larva hibernated and spun a cocoon the following spring, not feeding after hibernation. Moth bred June 2nd, 1898. The larva was given to Mr. Wm. Smith, of Paisley, by a friend who found it on a moor used by the Glasgow Corporation for rubbish, the supposition being that an ovum or larva had been introduced with the refuse matter.

Mr. MCLACHLAN exhibited a female of a Dragon-fly of the genus *Tetracanthagyna* from North Borneo, similar to *T. vittata*, McLach., but with a very broad ante-apical fascia on the wings, and with some asymmetrical markings. He said there might be a question as to the specific identity or otherwise of the insect. And there was also the question as to whether the insect described by Mr. C. O. Waterhouse as *Gynacantha plagiata* in the "Transactions" for 1878 was specifically the



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same. Mr. WATERHOUSE was of opinion that the species was distinct.

Mr. R. ADKIN exhibited two aberrant male specimens of *Argynnis aglaia*. In one of them the basal two-thirds of all the wings were almost completely covered with black, and broad black streaks crossed the remaining third of the wings to the outer margin, following the venation. In the other specimen the peculiarity consisted in the presence of a greenish-white blotch on each of the wings on the left side, similar in character to the pale blotches not infrequently observed in *A. paphia*. Both specimens were taken near Brighton in July last, where the species was unusually abundant.

*Papers.*

Papers were communicated entitled "Observations on some species of *Orina*, a genus of viviparous and ovo-viviparous beetles, by Mr. G. C. Champion, and Dr. T. A. Chapman," reported by Dr. T. A. CHAPMAN: "Illustrations of the sixth male ventral segment in seventeen *Osmia* species of the *Adunca* group, with a note on the synonymy of three species, and descriptions of five which appear to be new," by the Rev. F. D. Morice, M.A.; and Mr. ROWLAND-BROWN read the following:

Obituary notice of the late Dr. Otto Staudinger by Mr. H. J. ELWES, F.R.S.:—

The somewhat sudden death of my old friend Dr. Staudinger took place at Lucerne on October 13th, and as he was a man whom I had known for twenty years, and for whom I had a deep regard, I propose to give a sketch of his life. Shortly after I commenced the study of Lepidoptera, I had the good fortune to make his personal acquaintance, and soon realized that he was a man of quite exceptional energy and ability. It may safely be said, that he has been the leading Lepidopterist in the world for the last thirty years, and his loss will be much felt by all those who have known him personally.

Otto Staudinger was born at Gross-Wüstenfelde in Mecklenburg, on May 2nd, 1830, and was the son of a landed proprietor. He was educated at the Gymnasium of Parchim

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studied medicine and natural science, receiving his Doctor's diploma in 1854, when he published his first Entomological work, "De Sesiis agri Berolinensis."

Before completing his studies he began to travel and collect Lepidoptera with great energy. His first journey, in 1852, was to Switzerland and Montpellier in France, where several good entomologists then resided.

In 1854 he made a collecting expedition to Sardinia, of which no complete account, as far as I know, has been published.

In 1856 he went to Iceland, where he spent the whole summer, and soon after his return published in the eighteenth volume of the "Stettiner Entomologischer Zeitung" a most careful and complete account of his collections, giving full details of the climate of the island, the nature of localities which he visited, and the life history and variation of the insects he found. Notwithstanding the scarcity of Lepidoptera in Iceland, this paper is one of the highest value and interest, and should be studied by all young collectors as a model of what such a paper should be.

On Jan. 23rd, 1857, he married the daughter of a retired officer named Grabow, and went with his bride on a journey to Spain, where he resided for over a year, and where his first daughter, Carmen Dolores, now the wife of Dr. A. Bang-Haas, was born at Granada. In 1858 he made excursions in the Sierra Nevada, and resided six months at Chiclana, near Cadiz, where he collected insects with great success.

About this time he published his first priced catalogue of Lepidoptera, which has since come out regularly every year, and has become a sort of price current of Lepidoptera, on which all other European dealers base their lists. Staudinger was not a rich man, and being an excellent man of business, no doubt found what a great advantage it gave him to be able to dispose of the numerous and valuable duplicates which he acquired. Thus he bought the very large and fine collection of Julius Lederer of Vienna, and though he was always somewhat reticent as to his business affairs, yet I have no doubt that he

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could not in any other way have brought together what has become not only the most valuable and complete collection of Lepidoptera in the world, but also, as far as I know, the most perfect collection of any objects of natural history in existence.

Nothing was too small or too much trouble for Staudinger. His specimens were labelled and set with greatest care and accuracy. He was in correspondence with all the best collectors in Europe, and he trained young men to assist him in his work, and when he found one whose industry and ability satisfied him he sent him to collect in places which seemed likely to be profitable, and thus by exchange, purchase, and personal hard work, amassed an unrivalled series of European Lepidoptera, on which he based the Catalogue which is so widely known, the first edition of which was published at Dresden in 1861, and the nomenclature of which has since the appearance of the second edition in 1871 been practically accepted by those best qualified to judge of its accuracy.

In 1860 he went, in company with Dr. Wocke, who undertook the preparation of that part of the Catalogue which relates to the Microlepidoptera, on a journey to Northern Norway, and spent the summer at Bosekop on the Alten-fiord. An excellent account of this journey and of the rich collections made was published in the twenty-second volume of the "Stettiner Zeitung," and though Dr. Schoyen of Christiana, Sparrer-Schneider of Tromsö, and others have since actively collected in the same region, this paper remains the best account we have of the Arctic Lepidoptera of Europe.

In 1862 Staudinger again visited Central Spain, and spent the greater part of the season in the Sierra de Guadarama, at La Granja and San Ildefonso.

In 1866 he collected at Celles-les-bains in the South of France, and in 1872 made a second journey to Finmark, but neither of these expeditions seem to have produced as great results from an entomological point of view as his two former ones.

In 1870 he published in the seventh volume of the "Horæ Entomologicæ" a most valuable and complete catalogue of the Lepidoptera of Greece, mainly based on the large collections

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made in that country between 1858 and 1869 by his old friend, Dr. Theodore Krüper, a veteran naturalist who is still flourishing at Athens, and whose personal acquaintance I had the pleasure of making this year.

This work remains the only account we have of the Lepidoptera of Greece, and is indispensable to any one who wishes to study European Lepidoptera.

In 1875 Staudinger, having long desired to see for himself the East, made what I may call his greatest and most successful expedition to Asia Minor. He took with him from Dresden as assistant Emil Funke, who has since made some collecting trips to the East on his own account, and who has told me of Staudinger's indefatigable energy in collecting on this occasion. After spending the whole day under a burning sun, and returning loaded with spoil, Staudinger would sit up night after night to collect by lamp-light.

The party remained at Amasia the whole season of 1875, making excursions of two or three days in the environs, and returned with an immense quantity of specimens in the autumn. The results of this expedition were published by the Russian Entomological Society in the fourteenth and fifteenth volume of the "Horæ" in 1879–80, and form a volume of over 600 pages, the largest separate work which Staudinger ever wrote.

In 1880 and 1884 Staudinger again visited Spain and Portugal, stopping at Chiclana, Granada, and Lisbon.

In 1887 he visited the province of Constantine in Algeria, spending most of his time at Lambessa, but has unfortunately published no detailed account either of the Lepidoptera of Spain or of Algeria.

Before this he had begun to suffer from a disease of the heart, which eventually killed him, and though he still made annual trips to the Alps, he was unable to endure much bodily exertion. He continued however to occupy all his time in the study of his collections, and wrote numerous papers mostly descriptive of new species in the "Iris," "Stettiner Zeitung," and other periodicals. His work, though constantly interrupted by illness, was carried on with the same interest and vigour as ever, and though he was frequently obliged to leave his museum

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and lie down for an hour or two, he returned continually to what was to him the greatest source of pleasure. The last collecting trip he ever made was to Italy in 1896, when he collected at La Cava and Sorrento. After this he occupied himself mainly with the preparation of the long-desired third edition of the Catalogue, in which Dr. Rebel of Vienna assisted him very materially. When I last visited him, in May 1889, he was deeply interested in this work, and spent many hours in discussing with me the best geographical divisions of those regions in Asia in which such an immense amount of new Lepidoptera have been collected during the last twenty years. As he had not studied the physical geography of these mountains, he was most anxious to get my views on these questions, and begged me to lend him the maps which I had procured in Russia. He also borrowed a number of the type-specimens from the Grum-Grishmailo collection which I had then recently acquired, and returned them to me with very concise and vigorously-worded notes as to their specific distinction. He sent me the proofs of that part of the Catalogue which includes the Rhopalocera to revise, and though he did not accept the whole of the additions and criticisms which I made, it was clear to me that though he felt a failing of power he was as anxious as ever to ensure accuracy and completeness, and I hope that the preparation of this catalogue is sufficiently advanced to enable Dr. Rebel to complete it.

I must now say a few words on a phase of Dr. Staudinger's work which has been somewhat misjudged by those who did not know him well. Though he was a very keen man of business, and at times to some extent seemed to allow the commercial value of his specimens to influence his judgment in naming and describing local varieties of the wide-ranging species of Palæarctic Lepidoptera, he was always most ready to communicate his unrivalled knowledge to those whom he considered as scientific workers and not competitors in his business. Of late years at least he often expressed a strong desire to have nothing to do with that part of his work, which devolved on his son-in-law Herr Bang-haas. He would take any amount of time and trouble in comparing specimens with a view to their correct identification and nomenclature, and often

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lent me valuable specimens from his private collection for comparison.

He was perhaps too much inclined to regard the Palæarctic fauna from a narrow point of view, partly because he did not know the North American and Japanese species, many of which undoubtedly belong to it, so well as the European and North Asiatic forms. He was also rather inclined to select *typical specimens* so called for his collection, as he felt the difficulty of placing the numerous more or less intermediate variations which occur under one or other of the named varieties which he recognized and adopted. His descriptions, however, are unusually detailed, clear, and easy to follow, and to those who like myself possess a very imperfect knowledge of the German language, his writings, like his speech, were far easier to understand than those of many German authors.

The introduction to his Catalogue of 1871 shows how strongly he felt the importance of accurate nomenclature, and how hard he worked to carry out a system which should be universally adopted.

His love of order and neatness was well illustrated in his private collection, which was better arranged and kept in better condition than any I have seen, considering how much it has been used for study during his whole life. He had an excellent library and used it freely, and though, like every one else, he made mistakes at times, yet he was by no means bigoted in adhering to views which he had adopted when working with less complete materials and knowledge.

In his home life he was fortunate, his wife being a most worthy helpmate to such a hard worker. He was a fair linguist, speaking Spanish and French fluently, English and Norsk very fairly. In person he was tall and strong, and though somewhat short-sighted when I knew him, he had an extremely sharp eye for the distinctions of species.

He never seemed to take much interest in the biological questions which of late years have to some extent engrossed many entomologists, and was somewhat indifferent to structural details, which he had neither the time nor the inclination to study closely. Therefore he refused to attach much weight to

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distinctions based on genitalia, etc., and remained all his life rather one of the old school of systematic workers. I have not as yet heard what is to be the fate of his collection, but considering that it must always remain of the highest value in deciding questions of nomenclature, I hope that it may remain intact in a public museum where it will be accessible to other entomologists.

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## ANNUAL MEETING.

January 16th, 1901.

Mr. George H. Verrall, President, in the Chair.

Mr. R. W. Lloyd, one of the Auditors, read the Treasurer's Balance Sheet, showing a balance in the Society's favour of £160 16*s.* 11*d.*

Mr. H. Rowland-Brown, one of the Secretaries, read the following :—

## Report of the Council.

During the Session 1900–1 one Honorary Fellow, Baron M. E. de Selys-Longchamps, has died, and two Honorary Fellows, Professor Christopher Aurivillius of Stockholm, and Professor Freidrich Moritz Brauer of Vienna have been elected. Eight Ordinary Fellows have died : the Right Hon. Lord Dormer, Mr. W. G. Blatch, Major George Cockle, M.A., B. Mus., Mr. P. Crowley, Mr. T. G. Rylands, Mr. W. H. Lowe, M.D., Mr. J. H. Leech, B.A., and Mr. W. Blundell Spence ; three Ordinary Fellows have resigned, twenty-nine have been elected, and one restored to the list.

The number of Fellows elected is considerably above the average, and it is to be hoped that the efforts made by existing Fellows of the Society to bring fresh blood into it will be maintained. At present the Society consists of eleven Honorary Members, fifty-five Life and three hundred and seventy-two Ordinary Fellows—a total of 438, which represents a membership greater than in any previous year before or since the Society's incorporation.

Our Transactions for the year form a volume of 697 pages, containing thirteen Memoirs contributed by the following authors :—Mr. G. J. Arrow, Mr. W. H. Ashmead, Dr. T. A. Chapman, Mr. W. L. Distant (2 papers), Mr. H. J. Elwes, Mr. C. J. Gahan, Sir George Hampson, Bart., Mr. M. Jacoby, the late Mr. J. H. Leech (2 papers), Mr. K. J. Morton, and Mr. A. Quail.

Of these thirteen papers three relate to Coleoptera, two to Hemiptera, one to Hymenoptera, six to Lepidoptera, and one to Neuroptera.

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Part of the cost of the publication of his paper on the Heterocera of China and Japan was defrayed by Mr. J. H. Leech; and a part of the cost of Plate VIII., and the whole cost of Plate X., by Dr. T. A. Chapman.

The Memoirs above referred to are illustrated by nine plates, of which three are coloured, a number as regards the coloured plates below the average. But it is satisfactory to note that in all cases where applications have been made for such plates, the Council has been in a position to grant them.

The Report of Proceedings, containing a record of exhibitions made at meetings, and discussions upon them, consists of thirty-two pages, a number which it will be seen is not what it should be, and would certainly be increased were Fellows to display more energy in bringing objects of entomological interest to be inspected and discussed. The average attendance remains very much where it was last year: the number of Fellows signing the book being practically the same both at the monthly and the intermediate meetings.

During the past year 19 books (not counting Transactions, pamphlets, and papers) have been added to the Library, and the entry book shows that 349 volumes have been borrowed by Fellows. The increasing size, however, of the Library, as a result among other things of the Stainton Bequest, has seriously encroached upon the book space at the disposal of the Librarian, and sooner or later the question must arise as to the expediency of finding more extensive accommodation.

The Supplement to the Library Catalogue has been completed during the year, and is now ready for distribution.

A suggestion made to the Council to apply for some of the vacant rooms recently occupied by the University of London in Burlington House was considered by the Council, but H.M. Government having intimated that the whole space was to be appropriated to Departmental uses, no further steps were taken in the matter.

Among other questions submitted to the Council it was agreed that, in the interests of entomological science, it was expedient to watch the proposed scheme for converting Wicken Fen into agricultural land, and to give the support of the

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Society to the movement for its preservation initiated by the "National Trust for Places of Historic Interest, etc."

The financial condition continues satisfactory. The Subscriptions received for 1900 are in excess of those for any former year, and amount to £341 5*s.* 0*d.* A considerable amount has been received for arrears of Subscriptions, but a large sum is outstanding, and it is evident that the names of some of those Fellows in default will soon have to be struck off the List under Section 3 of Chap. xiv. of the Bye Laws. Twenty-two Admission Fees were received during the year, and one Life Composition, which has not yet been invested. The Sales of Transactions continue fairly good, but, as has been remarked in previous Reports, this is an eminently capricious item.

The year 1900 began with the large balance of £181 16*s.* 8*d.* in hand. By the end of the year this had been reduced to £160 16*s.* 11*d.*, with an ascertained liability of £63 5*s.* 2*d.* for printing the Supplementary Catalogue of the Society's Library, and there are other liabilities for plates, etc., not ascertained at present, so that the true balance on the year's working will probably prove less than half of the actual cash balance at the end of the year.

If the Council can see their way towards maintaining a respectable balance beyond the existing requirements, it is possible they may take into consideration the appointment of a paid Assistant Secretary, in order to relieve the Hon. Secretaries and Hon. Treasurer of part of the purely clerical work now performed by them.

11, Chandos Street, Cavendish Square, W.
16*th January*, 1901.

The Balance Sheet and Report of the Council were unanimously adopted.

The Secretaries not having received any notices of objection, the following Fellows of the Society were declared duly elected Members of the Council:—Robert Adkin; Charles G. Barrett; Professor T. Hudson Beare, B.Sc., F.R.S.E.; George C. Champion, F.Z.S.; William Lucas Distant; Horace St. J. K.

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Donisthorpe, F.Z.S.; the Rev. Canon Fowler, M.A., F.L.S.; Charles J. Gahan, M.A.; Herbert Goss, F.L.S., F.G.S.; Robert Wylie Lloyd; Robert McLachlan, F.R.S., F.L.S.; Henry Rowland-Brown, M.A.; Edward Saunders, F.L.S.; George H. Verrall; and Colbran J. Wainwright.

The following are the officers elected: *President*, the Rev. Canon Fowler; *Treasurer*, Mr. R. McLachlan; *Secretaries*, Mr. H. Rowland-Brown and Mr. H. Goss; *Librarian*, Mr. G. C. Champion.

Mr. G. H. Verrall then read his Address, at the conclusion of which the Rev. Canon Fowler moved a vote of thanks to Mr. Verrall for his Address and for his services as President during the past year. This was seconded by Col. Swinhoe and carried unanimously. Mr. Barrett then proposed a vote of thanks to the Officers of the Society, which was seconded by Mr. Donisthorpe, and also carried unanimously. Mr. McLachlan, Mr. Gahan, and Mr. Rowland-Brown spoke in reply.

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# ENTOMOLOGICAL SOCIETY OF LONDON.

**Balance Sheet for the Year 1900.**

| Receipts. | £ | s. | d. | Payments. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Balance in hand, 1st Jan. 1900 ... ... ... ... | 181 | 16 | 8 | Printing Transactions, &c. | 284 | 10 | 1 |
| Subscriptions for 1900 ... | 341 | 5 | 0 | Plates, &c. ... ... ... | 66 | 8 | 0 |
| Arrears ... ... ... ... | 15 | 15 | 0 | Rent and Office Expenses ... ... ... ... | 146 | 1 | 9 |
| Admission Fees ... ... | 46 | 4 | 0 | Books and Binding ... ... | 34 | 7 | 0 |
| Donations ... ... ... ... | 16 | 10 | 10 | Compiling Supplementary Library Catalogue ... | 11 | 7 | 6 |
| Sales of Transactions, etc. | 61 | 6 | 2 | Subscriptions in advance carried to 1901 ... ... | 16 | 16 | 0 |
| Interest on Investments:— | | | | Balance ... ... ... ... | 160 | 16 | 11 |
| Consols ... ... £18 0 10 | | | | | | | |
| Westwood Bequest 6 17 9 | | | | | | | |
| | 24 | 18 | 7 | | | | |
| Life Compositions ... ... | 15 | 15 | 0 | | | | |
| Subscriptions in advance | 16 | 16 | 0 | | | | |
| | £720 | 7 | 3 | | £720 | 7 | 3 |

## ASSETS.

| | | | |
|---|---|---|---|
| Subscriptions in arrear considered good (say) .. ... | £21 | 0 | 0 |
| Investments:— | | | |
| Cost of £684 12*s.* 11*d.* Consols ... ... ... ... ... | £681 | 18 | 0 |
| Cost of £239 12*s.* 4*d.* Birmingham Corporation 3 per cent. ... ... ... ... ... ... ... ... ... ... ... | 250 | 0 | 0 |
| Balance in hand ... ... ... ... ... ... ... ... ... | 160 | 16 | 11 |

## LIABILITIES.

| | | | |
|---|---|---|---|
| Cost of Printing Supplementary Catalogue of Library | £63 | 5 | 2 |

Robert McLachlan,
*Treasurer.*

Audited and found correct.

A. Hugh Jones.
T. Hudson Beare.
J. W. Yerbury.
R. Wylie Lloyd.

9th January, 1901.

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# THE PRESIDENT'S ADDRESS.

GENTLEMEN,

I am again placed in the position of being able to congratulate the Society upon its satisfactory position both numerically and financially. You have heard the report of the Council which shews that we elected 2 Honorary and 27 new Ordinary Fellows in 1900 and that we lost by death and resignation about 11 Fellows, leaving us now with 438 Fellows, which is a record number. Financially we commenced the year (after deducting liabilities) with a balance in hand of £181 16*s.* 8*d.* (of which £63 was for four Life Compositions), besides which we possessed about £21 of good arrears, and at the commencement of this new year we possess £160 16*s.* 11*d.*, and we have net assets £1050 11*s.* 9*d.*, which is also a record in our history. But although both numerically and financially the Society has touched its highest mark, I have not the slightest doubt but that it can still be made both sounder and stronger.

I had scarcely delivered my remarks last January upon the older Fellows of the Society when news arrived of the death of our last surviving original Member, Mr. William Blundell Spence, and we are therefore now cut off from our Founders, but the fact that Mr. Spence was for sixty-eight years a Member or Fellow of this Society is one that I think will for a very long time constitute a "Record."

Our Meetings have perhaps not been quite so well attended as could be desired, and each second Meeting in one month seems to reduce the amount of interest. The Council did last year shift one two-meeting month from February to October, which may possibly improve matters. There also seems to have been a lack of attendance at our Meetings on the part

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of many leading Entomologists; I do not by any means take this to heart personally as your President, but it does appear to militate against the success of our Meetings, as I feel sure that it has a tendency towards reducing general interest and detracting from the value of the discussions. I do hope that our leading Entomologists may see their way to attend more frequently in the future, and not only join in discussions but open up for themselves subjects which may excite greater interest.

As usual the real work of the Society has been done by the Secretaries and the Treasurer, and just as a year ago I deplored the loss of the hardworking Mr. J. J. Walker when he was ordered abroad on the Queen's service, so now do I most sincerely regret that Mr. C. J. Gahan has intimated to the Council that his personal occupations are too pressing to allow him to remain one of our Secretaries in the future. I take this opportunity to say that during my first year of office I was very much indebted to Mr. Gahan for the kind help and the patient way in which he gave assistance to me in my position, and though it may be possible for the Society to get another Secretary in his place as the Society always has done in the past, yet I feel certain that nobody could have more patience with many of the Contributors to our Proceedings and Transactions than Mr. Gahan shewed during his term of office. When Mr. J. J. Walker was obliged to send in his resignation a year ago it was most uncertain as to who would take his place, but the old proverb that "One Volunteer is worth two pressed men" seemed to come into force, and Mr. Henry Rowland-Brown, a Fellow of our Society, who though elected in 1887 had been previously but little known to us, expressed his willingness to step into Mr. Walker's shoes. I have watched Mr. Rowland-Brown's work very closely, and I have strong hope that we have found a successor to the late Mr. Dunning. To some of the younger Fellows of this Society I may say that I fully believe that we owe our corporate life and existence to Mr. Dunning; because the work that he did for years as Secretary and the curious anonymous donations which fell into the hands of the Society in the days of its deepest depression kept the

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Society afloat until it was able to pay its own way. Not for one moment do I suggest that Mr. Rowland-Brown should assist the Society in this latter anonymous manner, but I do think that he may take that deep interest in the Society and assist as its legal adviser in the same way as the late Mr. Dunning. Some may say truly that Mr. Rowland-Brown is not known as a recognised Entomologist, just as twenty-five years ago many said that Mr. Dunning had written very little on Entomology, but Mr. Dunning occasionally contributed Entomological articles which were a treat to scientific students, and especially to those who had got a touch of the enjoyment of technicalities. I do not at all despair that we may get some such writings from Mr. Rowland-Brown as time goes on, and I do know that during the last eleven months he has given very great time and care to the Meetings of the Council, which are not disclosed to the Fellows of the Society but in which most of the important work of the Society is done. I have seen enough of Mr. Rowland-Brown to hope that his connection with this Society may be continued for a long time. The Society is to be congratulated upon the return of Mr. Goss to the Secretariat, as his eleven years' work in the past proved his capability of holding that post well, and if the Society is fortunate enough to have two good Secretaries who can agree upon a division of labours, it is possible that for a time the suggestion of a paid Assistant-Secretary may be dismissed, but I would none the less supplement the remarks made in the last two Presidential Addresses that the work of the Secretaries might be reduced by the appointment of a paid Assistant-Secretary. I raise this point, not that it is urgent at the present moment, but in order that it should not be overlooked in the future, and in the view that the Society is now in a position to pay for a large amount of clerical service, which is the very work which frightens some of our most capable men from accepting office. With regard to the Officers of the Society, all of whom I have to thank for their support during the past year, I can only remark that while Presidents and Secretaries come and go the Treasurer stops on for ever, and I hope that he may long



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continue to do so, as I cannot imagine that the Society would ever get a better one. I do not think that he ever lets slip a possible subscription, while he understands from his wide knowledge of Entomologists where a kindly relaxation of stringent rules may be exercised, and I can only repeat what I said last year, that while in the straitened finances of the Society in the old days he held the strings most tightly, he has equally known how to loosen those strings when he can afford to do so, and especially when he has thought that by doing so the Society would benefit not only in Britain but throughout the world. There is another Officer of the Society who has done a very large amount of hard but insufficiently recognised work during the past year or two; I refer to our Librarian, Mr. G. C. Champion, who has gone through the laborious task of preparing a Supplemental Catalogue of our Library; I know that this task has been a very heavy one, because to begin with it has entailed the inclusion of all the books and pamphlets which were bequeathed to the Society by the widow of the late Mr. H. T. Stainton, which constituted, I believe, the most important bequest ever made to the Society, while one of our late Secretaries, Mr. W. F. H. Blandford, has given valuable assistance to Mr. Champion in identifying the items of that bequest, as well as himself presenting a very large number of books and pamphlets to the Library, for which I do not think proper thanks have ever been given to him, and he has rendered services since he resigned the Secretaryship which have not been sufficiently acknowledged.

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## OBITUARY.

William Blundell Spence, who died at Florence on January 23rd, six days after I was referring to him in my last Presidential Address, was the sole surviving original Member of this Society which was founded in 1833. He did but little work in Entomology, though he probably assisted his father, whose name is indissolubly connected with Kirby and Spence's Entomology. He was in his 87th year. By his death Mr. J. W. Douglas (1845) becomes the senior living Fellow of

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the Society, and next to him Lord Avebury (1850), better known to us as Sir John Lubbock.

Dr. W. H. Lowe who has also died during the past year was probably the second oldest surviving Fellow of this Society, as he joined in 1850, but I have seen no biographical notice of him, nor do I know what branch of Entomology he studied.

William Gabriel Blatch of Knowle near Birmingham, who died on February 25th, was elected a Fellow of this Society in 1890, but long before that date he had acquired a high local reputation as a successful collector and student of British Coleoptera in the Midlands. In 1888 he came forward as one of the founders of the Birmingham Entomological Society, a body few in numbers but conspicuously energetic in work, and for the first five years of its existence Mr. Blatch was its President. He was about 60 years old.

Dr. Walter Battershell Gill died on February 6th, at the age of 77 years. To the present generation of Entomologists he was very little known, but I can well remember him in the halcyon days of the Entomological Club, of which extremely limited coterie he was a Member for many years.

Dr. Otto Staudinger died on October 13th at Lucerne. His name has for a long time been one of the best known of all living Lepidopterists, both from his immense collections and his business transactions in Entomology, and especially from the universally known Catalogue of European Lepidoptera which he published in conjunction with Dr. M. Wocke. I will not deal further with his biography here because Mr. Elwes has done full justice to the subject in a paper which will appear in the next part of our Proceedings. Dr. Staudinger was over 70 years old. I am very glad to notice that the publication of the third edition of his celebrated Catalogue will not be delayed through his death, but that it is announced to appear very soon.

Professor Emile Blanchard, who was for a long time at the head of the Entomological Department of the Musée d'Histoire Naturelle at Paris, died during the past year. He wrote on all orders of insects, and although his work may not be considered to be of the highest scientific value, yet he endeavoured

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to encourage the study of Entomology in France. I do not know his age, but as he published an apparently good paper seventy-four years ago he surely must have exceeded 90 years.

Ottmar Hoffman of Regensburg died on February 22nd in his 65th year. Lord Walsingham has written an obituary notice in the "Entomologists' Monthly Magazine" for September last, which gives an account of his work and commends him for his exhaustive researches in clearing up critical differences of structure and obscure life-histories of European Micro-Lepidoptera. It is very fortunate that his collections have been acquired by Lord Walsingham so that they may ultimately go to the British Museum, which bids fair to possess the best representative collection of Micro-Lepidoptera in the world.

Professor Joseph Mik died on the same day as Staudinger, October 13th, after a very short illness. He was personally known to me, as I met him at Vienna in 1888, and again at Hainfeld in Lower Austria, where he usually spent his holidays, in August 1896. I very much regret his death, as I considered him to be perhaps the most capable all-round working European Dipterologist of recent times, and as he had just retired from his laborious and embarrassing school duties, and was only 61 years old, I had hoped that he might have been spared to give us much more from his fertile pen. Though he published a vast quantity of notes and criticisms on European Dipterology he never published any standard work, and some critics have said that whereas his position as Editor of the "Wiener Entomologische Zeitung' enabled him to issue a very large number of notes under his "Dipterologische Miscellen," they should have been condensed into more concentrated work. I feel great difficulty in forming any decided opinion on that; my own predilection is to act in absolutely the opposite way from Mik, but I am fully aware that by so doing scores of notes which might be of value to existing students are withheld, and run the further risk of never being published at all, while Mik's notes enabled him to keep level with the Dipterological knowledge of the day both as regarded his own studies and

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in his criticisms of his contemporaries. He was not only a Dipterologist but a good botanist, in which study his wife joined him, as I have known from delightful rambles with him at Hainfeld, while he was also highly accomplished as a Musician and a Philologist.

Emmanuel Pokorny died on March 21st at Troppau in Austrian Silesia, at the age of 63 years. In his earlier studies he worked at Lepidoptera, but in recent years he wrote a good deal about Austrian Diptera, especially on those from the Tyrol.

Baron de Selys-Longchamps, who was our senior Honorary Fellow, I have at almost the last moment been informed, died on December 11th at Liege. He was perhaps the most widely known European Odonatist, if such a term may be allowed in Britain, for at any rate a large number of years, but as he had nearly reached the age of 88 years it is only natural that his active work was diminished in recent times. The study of *Odonata*, or as we commonly call them "Dragon-Flies," seems to be growing in Britain, and with that will grow the knowledge of the good work done by de Selys-Longchamps. He was born at Paris in 1813, and began to write in 1831. He was elected an Honorary Member of this Society in 1871, and I doubt if any Honorary Member has ever previously held that position for 29 years, because men are seldom given that honour until they have earned high reputation and become well advanced in years.

Mr. J. H. Leech died on December 29th last at Salisbury. I do not know his age, but I know that he was a comparatively young man. Very few persons have devoted more capital and assistance towards investigating the Palæarctic *Lepidoptera* than were given by Mr. Leech; as is shewn by our own Transactions and by many other writings.

Lord Dormer's death has been announced, and he has been a Fellow of our Society since 1886, but I do not know what branch of Entomology he studied.

Major George Cockle, who has been a Fellow of this Society since 1874, has also died. I know nothing about his entomological work.

Mr. Philip Crowley is also another Fellow that we have lost

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by death, and our own Transactions and other works shew the valuable studies that he carried out in the Lepidoptera. He has been a Fellow since 1883.

Mr. Thos. Glazebrook Rylands, who was elected a Fellow of this Society in 1894, has also died during the past year.

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Gentlemen, a year ago I held strongly to the principle that a Presidential Address should be founded on subjects which might be of general interest to all Fellows of the Society, and that it should not be confined to some special subject which commended itself to a limited number of students. I have been told that the best parts of my Address last year were those in which I more especially referred to Dipterology, because that was the subject which I probably understood best, but I know that any remarks on that branch of Entomology would commend themselves to but a very few of you, and I still hold to the opinion which I then expressed; and in the remarks which I am now about to make to you, I intend to refer to subjects which I think should be of general interest to all of you, no matter what your specialty may be; I use the word specialty intentionally, because all Entomologists of the present day must devote themselves to some limited study if they desire to do any good and valuable work, but yet there are general subjects which all must study in common. One must be able to read before one can understand descriptions, and one must be able to write before one can describe species, but I hold that beyond that one must be able to read descriptions in various languages before one can venture to endeavour to name a species, and one must be able to spell correctly before one should publish descriptions. I believe that these two statements are truisms which will commend themselves to almost all of you, and so it is upon these two points that I wish to address you. I intend to consider to-night (1) Descriptions and Types. (2) Orthography. I know that on both these subjects I am dealing with matters on which there are great divergencies of opinion, but I prefer to deal with subjects on which there is a strong difference of opinion, as I think that all of you must take an interest in them.

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## Descriptions and Types.

I once at a Meeting of this Society, in perhaps an incautious moment, expressed a wish that as soon as a man had described a species his type should be destroyed, so that no record of the species should exist except his description. If his description were good and adequate his species would stand, but if his description were bad and inadequate it would fall and hold no rank of priority, unless it might be adequately described at some subsequent date before anybody else had given it a different name, and that even then its date to secure priority would rank from the adequate description only. I may say that I began to act on this principle in a "List of British Diptera" which I published in 1888, as in that List I expurgated 195 species already described by British authors from specimens of British species, and were I to publish a second edition I should expurgate at least 125 more of Walker's so-called species, thus making a clean sweep of about 320 names which were simply burdening our lists and proving a stumbling-block to those who wished to study certain groups. These names are of no scientific value, and fortunately in most cases the original type specimens have been either destroyed by mites or mould, so that further identification is impossible. I intend in any future work which I may be able to carry out, to continue this process in Dipterology, and to remove all names of what I cannot even dignify with the epithet of insufficient descriptions, but which I should call rubbish descriptions. I must emphatically consider that such "rubbish" descriptions possess nothing but waste-paper value, or are less than the equivalent of "Catalogue names," even though the original type specimen may be eventually identified and in the end adequately described by some subsequent student. This leads me to what I believe is considered another most heretical view, and that is that in my opinion an author should in many cases not identify his original type specimen. I know that when I have ten or twenty or fifty specimens of a probable new species before me I describe that species from the lot, and not from one individual specimen, and I most distinctly object

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to labelling one specimen out of the fifty as my type. As a rule a species cannot be adequately described from one specimen, but it can be from fifty specimens. What an absurdity it would be therefore if an author described a new species from fifty specimens with which he was well acquainted, but that it happened that one out of the fifty could subsequently be differentiated from the other forty-nine, while his type label happened to be attached to that other unfortunate specimen.

I know also that great value is often associated with original types because they may be the only clue to what their describer had before him, and I well remember in my early days looking with surprise at the late E. W. Janson when he remarked to me that the original type of a species badly described was worth more money than the type of a species well described, because the latter could be easily identified from its description, while the former could not be identified except by a reference to the original type specimen. If this were correct, Gentlemen, what is the use of descriptions? Are they not all waste of time and printing? If, however, the description exists on its own merits the type may disappear. Let me try to put my contention more concisely. Man is supposed to have begun business by barter, *i.e.* he exchanged some of his possessions which he could spare for some of the possessions of another man which he wanted, just as one of us may exchange his own duplicates for the duplicates belonging to another person, whereby a mutual advantage is secured. Of course certain possessions were of more value than others, such as it might take six oxen to exchange for one woman—if she were a good-looking specimen in perfect condition, or say three oxen if she were an old and battered specimen—so certain Entomological duplicates are worth more than others. But just as civilisation progressed, a money value attached itself to all articles, so that interchange was always effected by some form of money, which became the universal medium in place of bartering; so I consider that the civilised method of dealing with Natural History specimens is through the descriptions, which like the British sovereign, have a recognised value in all parts of the world. To carry the simile somewhat farther,

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we know that bad money often gets into circulation, but when detected is forthwith destroyed, or at least withdrawn from currency, and is never allowed to be again used, so the bad descriptions which are the bad coins of the Scientific World should in a similar way be destroyed or withdrawn for ever from circulation as soon as they are detected. I hold that the good currency of the civilised Scientific World is based on the genuine coin of good description, and not on the barter of interchange, and farther that this good coin of "good description" must be uttered from some recognised and accepted "Mint," and not be put forth from some unrecognisable Hungarian, Russian, or Japanese circulations which could only be accepted in their own limited area. One point further still: we know that when coinage was not carried out so carefully as it is at present that local towns and even local tradesmen issued "tokens" which were exchangeable in those towns or with those tradesmen for goods of the value of some mintage coin, but that those tokens possessed no recognised value outside of the district in which they circulated. I consider, by the same reasoning, that the publications of new species or even varieties in the papers issued by local Societies only represent "tokens" which, although they may be of the same value as the corresponding mintage coin in their own area, yet are not legal tender outside a limited district, and consequently should not be accepted as a circulating medium. It is of course possible that occasionally a good coin may be mistaken for a bad one, and in all such cases, of which I could give many, the coin (or description) must be reinstated to its original value.

One other point on types. It is very frequently the case that in old collections only one or two specimens are retained out of probably a large number of specimens which had been studied by the original describer, and it by no means follows that the one or two so-called original specimens which are retained faithfully represent the author's idea. I know that this is the case with DeGeer's collection at Stockholm, and I believe that it is the case with many other old collections, so that the so-called type may not truly represent the species described.

The conclusion I arrive at is that all species must stand or

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fall by their description, as that is the only true publication of the species; if the description is inadequate the species must fall, and it should be merely a matter of curiosity to search for an author's original specimen in order to find out what he meant by his imperfect description. Rewards should be given for good work and Punishments for bad work.

In the "Canadian Entomologist" of last month Mr. William Ashmead is responsible for the following announcement:—

"The following generic names in the Hymenoptera, alphabetically arranged, being pre-occupied in other groups of zoology, must be changed, and I propose for them the following names." Then follow sixteen names in seventeen lines with a bare proposition of sixteen other names. These sixteen names *proposed*—I purpcsely emphasise the word "proposed" —are at the utmost "Catalogue Names." Mr. Ashmead has not described a single one of those genera, nor has he shewn how any genus is distinguished from its allies, nor does he in any way prove that his supposed pre-existing genus ever had any sound position, nor does he give any clue as to what species might be considered typical for his new generic names, nor, above all, does he shew that he knows anything at all what he is writing about more than anybody who is absolutely ignorant of any knowledge concerning Hymenoptera. I have dignified his names as "Catalogue Names," but in my opinion they are not worthy of even that rank, but are simply paper or rubbish names, and as such they possess no priority rank or status of any kind. I am not a Hymenopterist, but I could have suggested all such names in Hymenoptera by picking up Scudder's "Nomenclator," or if I caught sight of names which were said—mind, which were *said*—to have been otherwise previously used. If any Hymenopterist when dealing with the descriptions chooses to use any of those "proposed" generic names he may do so, but he ought to take the name as a simple suggestion, and if he omitted to notice the proposal it could not possibly affect any name which he might impose on such a genus, because he could most clearly state that he had never found any description of (say) the genus *Brachycranium*, and even if he accepted the designation it would simply be accepted from a *proposed*

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name. Mr. William H. Ashmead's article does not give any new generic titles, but it *proposes* some for a number of comparatively unrecognised genera. I do not know anything about Mr. William H. Ashmead, except that he has done most excellent work in North-American *Hymenoptera*, and I know next to nothing about Hymenoptera, but I can hardly imagine the possibility of anybody proposing such a number of generic names which are headed under the title of "Some changes in generic names in the Hymenoptera" without describing the new genera. They are most distinctly not "changes in generic names" but "*proposed* changes in generic names," and they are most emphatically only *proposed* changes until somebody competently deals with each genus and properly describes it and compares it with its allies, and gives the reasons in some detail as to why the name should be altered. Even in the extraordinary nomenclature commonly accepted by British Botanists not one of these proposed names could hold any value, as not one of them indicates a binomial. I am glad to have seen Mr. William H. Ashmead's article in the "Canadian Entomologist" before giving my address, as it seems to me to be a direct challenge to my remarks in the last page of my address last year, and as such it may tend to prove that ignorant priority should have no value against educated and deliberate study, and that it should become recognised as a rule that a mere arbitrary change of a name should only rank with Catalogue value. I have been guilty of the fault myself in a minor degree, and in pleading guilty I willingly submit to the punishment that my past actions should have no prospective value.

Anybody may suggest or propose a name for a genus, but it is only the author, who describes a genus, that can impose a name. There has been a yielding to suggestion of names to such an extent that such names are thought to have certain absolute rights of priority, but it is necessary to point out that such names should be put back to their proper place of mere suggestions.

Since writing the above I have seen a list of similar suggested names for genera of *Rhynchota* in this month's "Entomologist," some of which names are fairly well-formed

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nomenclature founded on [illegible] be treated as *suggested* names. No change of a name on the ground of pre-occupation should be accepted unless there exists absolute proof that the supposed previous name had and has a genuine existence.

There is also a lack of saving trouble exhibited by many authors in recent writings; for instance, Williston in our Transactions of 1896, on page 270, stated that as a genus which he had named *Snowia*—he did not state in what year—had been previously used—he gave no reference as to when or where it had been previously used, and it necessitated a reference to some fifteen volumes to find out that a *Snowia* had been suggested in 1884;—but it may save Mr. Williston a little trouble to tell him that his substituted name of *Sackeniella* was preoccupied in 1894, so that he can now, if he likes, give a third name to his genus.

## Orthography in Entomology.

The more exactly any science becomes defined the more exact must the terms become which are used therein, and the more limited their meaning. Philology is a very attractive science which watches the gradual evolution of every word from its first ancestor just as a Darwinian watches, or perhaps I had better say as we all watch, the gradual evolution of the species: nevertheless the Philologist endeavours to fix his word as it should exist at the present moment, just as the Naturalist endeavours to fix his species as existing at the present time. Neither the Philologist nor the Naturalist can fight against the perpetual changes which environ them, but the "terms" which are used can be almost fixed, because they are dealt with from a fixed and unalterable date, and consequently all those "terms" can be ranged to agree with that fixed date.

Linné when establishing the binomial system of nomenclature founded it upon the Augustan Latin, and it is only by a rigid adherence to that foundation that any attempt at finality of nomenclature can be attained.

The law of Priority is a very good law,—within limits, as

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caused by p[illegible] Those
should be wiped out.
write to educate, and surely we are not to be
ignorant. Only fancy a man as recently as 1896 proposing
such genera as *Brevicornu* and *Nervijuncta*! Why, he ought to
be put back into the nursery, and are we to learn *under* him?
Let such a man first master the alphabet before he rushes into
print to teach his grandmother to suck eggs. Mr. Dunning
gave another instance of resistance to orthography which
remains even now, more than thirty-two years since he wrote
and one hundred and seven years since the correction was
made; unfortunately all of us who possess collections know the
word *Psocus*, but very few know that it was a genus founded
by Latreille in 1794 from the word ψώχω (to rub to pieces),
an attribute which one species still retains, as most of our
collections testify; in 1796 Latreille himself correctly spelled
the word *Psochus*, but the priority-mongers have ever since
ignored his proper correction; Mr. Dunning very happily asked
whether if "the printer instead of dropping out the *h* had
omitted (say) the *o*, thereby reducing the name to *Pschus*?
must Latreille, and all the world besides, have for ever con-
tinued to sputter over the genus Pschus?" I am not sure
that the word "sputter" would have been quite the correct
one for English-speaking people. Surely the originator of a
name is more to be considered than the printer, but also
the educated speller is more to be considered than the half-
educated schoolboy. As to nonsense names, their use is a
disgrace to their inventors, but is, I am afraid, beyond remedy;
and even if allowed to exist such names must be formed in
what would be pronounceable Latin, or else the sticklers
for rigid priority in spelling may soon be upset by some words
impossible for pronunciation, at any rate by us, as I must
admit that recently the Russians and Hungarians have in
numerous cases given commemorative names which assuredly
Cicero would have been unable to enunciate in Latin. Generic
and specific names must bear a Latin appearance, and whereas
demurred the other day to hearing a *Proutia* called *eppingell*
because it came from Epping Forest, I did it because the ne

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Our nomenclature must be based, even though at times the rules upon which certain laxity is now advisable in regard to rigid adherence. Advocates of original spelling either seek to save themselves trouble or seek to conceal their ignorance of orthography. A few days ago I was reading some "reasons" for rejecting "emendations," and the answer to them is absurdly easy. They were—"1. They are fatal to stability in nomenclature," to which the answer is that ignorance and cacography *are* fatal to stability in nomenclature, and consequently must be ejected." "2. It is sometimes very difficult to say what is absolutely the ideally classical form of a name." Everybody admits that, and nobody tries to turn *Rhinoceros* into *Ceratorrhinus*. "3. Names are names, and nothing more," is simply answered by the fact, the names used in Natural History under the binomial nomenclature must be names which could have been used by the Latins in the prime of their language. I think that the most advanced advocate of inviolability, if his name were Smith, would jib at such a name for a new insect as (say) *Pediculus smithicola*, and such a name would be against the canons of binomial nomenclature as originally established. Inviolability is *impossible* because of printers' errors, orthography, and good taste, and consequently the only question is as to where the limit of emendation should be drawn, and the original laws of binomial nomenclature draw these limits in a fully satisfactory manner.

Never will I agree to ask careful scientific students to learn from the ignorant and careless.

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Gentlemen, one word more on a curiously different subject, but one which may enable any of us to refute the *cui bono* argument so often used against Entomology. It is an argument which is used by unscientific or ignorant people only, but those are essentially a set of people who can be attracted by Art and Romance; they have given up their gibes against Music, Astronomy, etc., but some still fail to understand what possible good an Entomologist can be to (say) the Romantic section of society. Dr. Conan Doyle, in one of his

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Variety of *Argynnis dia*, exhibited, xxiii.
Wing-markings in pupæ and imago of *Aporia cratægi*, notes on, xxiii.

## COLEOPTERA.

*Anchomenus quadripunctatus*, exhibited, xiii.
*Cossyphodes bewickii*, exhibited, xiii.
*Carabus auratus*, exhibited, vii.
*Callomorpha wahlbergi*, exhibited, viii.
*Chrysomela salisburiensis*, exhibited, xxv.
*Clythra*, genus, notes upon, ii.
*Clythra quadripunctata*, exhibited, ii; larval cases, exhibited, xiii.
Coleoptera, stridulating organs of, ii, 433.
*Dinoderus minutus*, exhibited, ii.
*Dinoderus, substriatus*, exhibited, ii.
*Drusilla canaliculata*, exhibited, xiv.
Eumolpidæ, Descriptions of new species and a new genus of South American, with remarks on some of the genera (M. Jacoby), 453. The following genera and species referred to and described:—*Aybalus bolivianus*, 465.—*A. chiriquensis*, 466.—*A. nigroviolaceus*, 464.—*A. strigicollis*, 467.—*A. subcostatus*, 466.—*Alethaxius angulicollis*, 490.—*A.? sericeus*, 491.—*A. verrucosus*, 492.—*Argoa mucronata*, 500.—*Aracyntha thoracica*, 471.—*Campylochira fulvicornis*, 493.—*Chalcophana brevis*, 496.—*C. cœruleipennis*, 497.—*C. erichsoni*, 498.—*C. fenestrata*, 495.—*C. picta*, 498.—*Chalcophaninæ*, 494.—*Chalcophyma lefevrei*, 456.—*Chrysodina diversicornis*, 454.—*C. laticollis*, 456.—*C. subcostata*, 454.—*C. thoracica*, 455.—*Chrysodininæ*, 454.—*Colaspinæ*, 469.—*Colaspis amabilis*, 480.—*C. amazonæ*, 476.—*C. batesi*, 475.—*C. columbica*, 479.—*C. corrugata*, 470.—*C. elegans*, 473.—*C.? heteroclita*, 481.—*C. imitans*, 475.—*C. multicostata*, 478.—*C. ornatipennis*, 481.—*C. perplexa*, 472.—*C. porosa*, 477.—*C. rufipes*, 474.—*C. venezuelæ*, 477.—*C. viridipunctata*, 478.—*Colaspoides abdominalis*, 505.—*C. balyi*, 508.—*C. decemlineata*, 507.—*C. flavofasciata*, 507.—*C. paraguayensis*, 506.—*C. pavonina*, 504.—*Coytiera ænea*, 468.—*Dictyneis canaliculata*, 502.—*Edusinæ*, 500.—*Endocephalinæ*, 502.—*Endocephalus nigripes*, 503.—*E. militaris*, 503.—*E. tibialis*, 502.—*Hermesia brunnea*, 489.—*Iphimeinæ*, 463.—*Iphimeis bifasciatas*, 463.—*I. fulvicollis*, 463.—*Lamprosphærus angulicollis*, 461.—*L. bicolorus*, 458.—*L. bimaculatus*, 457.—*L. dimidiatus*, 460—*L. fulvicornis*, 459.—*Glyptoscelis dohrni*, 501.—*L. fulvimanus*, 460.—*L. humeralis*, 459.—*L. terminatus*, 462.—*Lepronota discoidalis*, 464.—*Melinodea, gen. nov*, 409.—*M. metallica*, 509.—*Metaxyonycha batesi*, 471.—*M. boyotensis*, 469.—*M. fasciata*, 471.—*M. rugosa*, 470.—*Myochroinæ*, 501.—*Otilea foveipennis*, 495.—*O. fulva*, 494.—*Paria subænea*, 510.—*Pseudocolaspinæ*, 499.—*Sphæropis fruhstorferi*, 499.—*Rhabdopterus abdominalis*, 486.—*R. amazonicus*, 485.—*R. apicipes*, 486.—*R. apicornis*, 484.—*R. columbiensis*, 483.—*R. fulvicollis*, 488.—*R. imitans*, 483.—*R. peruensis*, 482.—*R. semifulvis*, 489.—*R. venezuelensis*, 457.—*Typophorinæ*, 482.
*Hypocephalus armatus*, exhibited, xxv.
*Heliocopris*, cocoon of a, exhibited, vii.
Lamellicorns, on Pleurostict, from Grenada and St. Vincent (West Indies),

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(G. J. Arrow), 175. Species belonging to the following families and genera referred to and enumerated :—*Anomala*, 178.—*Chlorota*, 178.—*Cyclocephala*, 180.—*Dynastidæ*, 180.—*Lachnosterna*, 175, 182.—*Leucothyreus*, 179.—*Ligyrus*, 181.—*Melolonthidæ*, 175.—*Pelidnota*, 179.—*Phileurus*, 181.—*Plectris*, 177.—*Rutelidæ*, 178.—*Stratægus*, 181. The following new species described:—*Chlorota tristis*, 178.—*Cyclocephala vincentiæ*, 180.—*Lachnosterna latens*, 176.—*L. patens*, 175.—*L. trinitatis*, 182.—*Leucothyreus vincentiæ*, 179.—*Pelidnota velutipes*, 179.—*Plectris fungicola*, 177.—*P. lignicola*, 177.

*Lomechusa strumosa*, exhibited, xiii.

*Myrmedonia collaris*, exhibited, xiv.

*Orina*, species of, referred to, and exhibited, ii, xiv.

*Orochares angustatus*, exhibited, xviii.

*Pachyta sexmaculata*, exhibited, xiii.

*Sayra*, species of genus, exhibited, vi.

*Spilopyra sumptuosa*, exhibited, viii.

Stridulating organs in Coleoptera (C. J. Gahan), 433; their occurrence noticed and position, etc., described, in the following families and genera:—*Acalles*, 450.—*Anisodera*, 437.—*Anomalipus*, 438.—*Batocera*, 452.—*Blethisa*, 448.—*Bostrichidæ*, 441.—*Botryonopa*, 438.—*Cacicus*, 448.—*Camelonotus*, 451.—*Camptorrhinus*, 450.—*Carabidæ*, 441, 442, 448.—*Cephalodonta*, 438.—*Cerambycidæ*, 443.—*Cetoniidæ*, 440, 447.—*Cicindelidæ*, 448.—*Cistelidæ*, 438.—*Clythridæ*, 444.—*Colymbetes*, 451.—*Copridæ*, 440, 446.—*Crioceris*, 451.—*Cryptorrhynchus*, 450.—*Cychrus*, 442.—*Curculionidæ*, 450.—*Dryophilus*, 438.—*Dynastidæ*, 440, 451.—*Ectatorrhina*, 450.—*Elaphrus*, 448.—*Endomychidæ*, 435.—*Estigmena*, 437.—*Eupterus*, 451.—*Gasterocercus*, 450.—*Geotrupidæ*, 444, 446.—*Goniolanguria*, 436.—*Heliocopris*, 446.—*Heliopathes*, 451.—*Helops*, 438.—*Heteroceridæ*, 447.—*Hispa*, *Hispidæ*, *Hispopria*, 438.—*Hopatrinus*, 438.—*Hydrophilus*, 443.—*Ips*, 435.—*Ischiopsopha*, 447.—*Lamiidæ*, 443.—*Languriinæ*, 434.—*Lasiocercis*, 444.—*Lema*, 451.—*Leucographis*, 444.—*Ligyrus*, 449.—*Lucanidæ*, 444.—*Macraspis*, 447.—*Megalopidæ*, 444.—*Melolonthidæ*, 440.—*Mononychus*, 450.—*Necrophorus*, 457.—*Omaloplia*, 441.—*Oryctes*, 451.—*Oxycephala*, 438.—*Oxycheila*, 448.—*Passalidæ*, 444.—*Pelobius*, 449.—*Philus*, 443.—*Phonapate*, 441.—*Plinthus*, 450.—*Platythmysus*, 446.—*Praogena*, 438.—*Priobium*, 438.—*Privnidæ*, 443, 448.—*Ptinidæ*, 438.—*Ranova*, 444.—*Rutelidæ*, 440, 447.—*Scolytus*, 439.—*Selinus*, 438.—*Siagona*, 441.—*Spilispa*, 436.—*Stenerula*, 438.—*Tenebrionidæ*, 438, 448, 451.—*Teretilanguria*, 435.—*Trox*, 449.—*Typhæus*, 446.—*Wallacea*, 438.

*Trogophlæus anglicanus*, exhibited, xiii.

## DIPTERA.

*Achias longividens*, exhibited, i.

*Anthrax paniscus*, exhibited, xxii.

*Anthrax fenestralis*, alluded to, xxii.

*Atherix crassipes*, exhibited, xxii.

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*Strenia clathrata*, var. exhibited, xv.

*Tyria jacobææ*, cleared wings of, exhibited, x.

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*Xiphidium dorsale*, exhibited, v.

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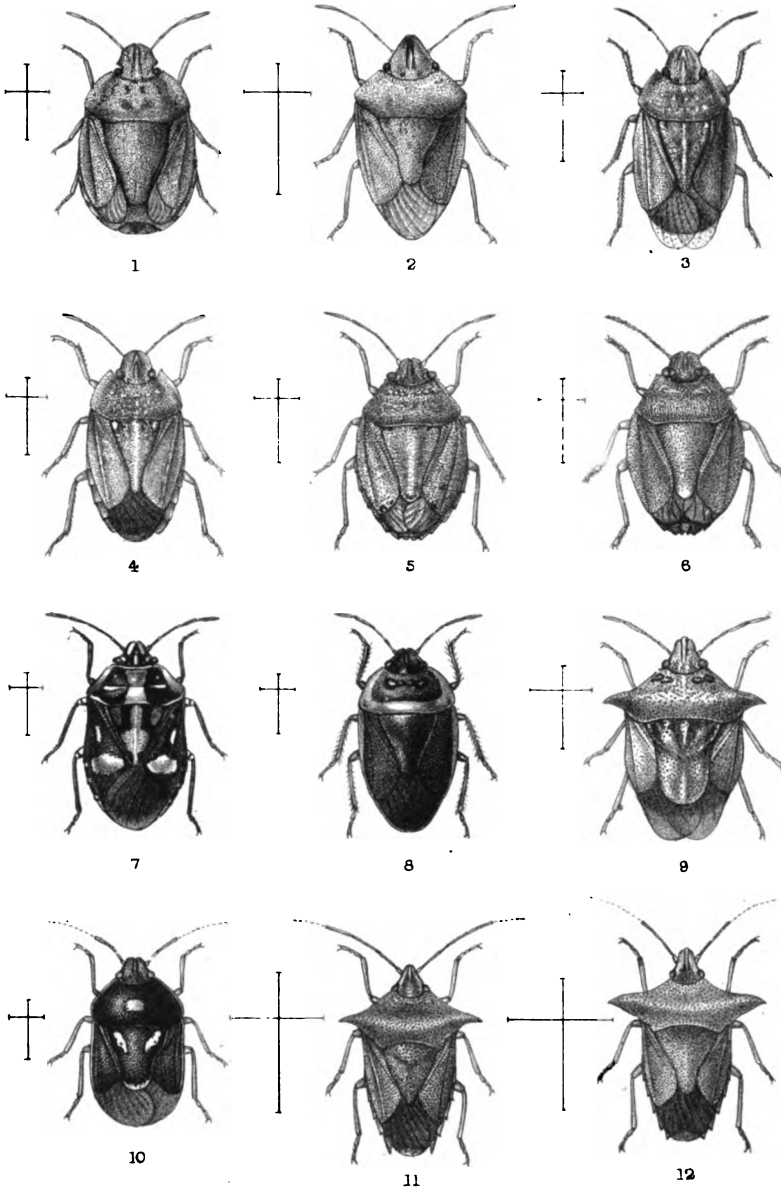


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PENTATOMIDÆ.

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## Explanation of Plate III.

Illustrating Sir George F. Hampson's paper on "New Palæarctic *Pyralidæ*."

| | | |
|---|---|---|
| Fig. 1. | *Macalla amurensis* | Amur. |
| 2. | *Aglossa pulverealis* | Algiers. |
| 3. | *Pionea perfervidalis* | Syria. |
| 4. | *Phlyctænodes rhabdalis* | Central Asia. |
| 5. | *Titanio hesperialis* | Central Asia. |
| 6. | *Entephria tylostegalis* | Amur. |
| 7. | *Pionea leucopeplalis* | Central Asia. |
| 8. | *Stenia flavipunctalis* | Spain. |
| 9. | *Crambus cuencalis* | Spain. |
| 10. | *Constantia atrisquamalis* | Syria. |
| 11. | *Pilocrocis contortalis* | Amur. |
| 12. | *Phlyctænodes phæoneuralis* | Siberia. |
| 13. | *Talis menetriesi* | Central Asia. |
| 14. | *Phlyctenodes leucalis* | Caucasus. |
| 15. | *Constantia sanctalis* | Syria. |
| 16. | *Constantia canifusalis* | Algiers. |
| 17. | *Crambus furciferalis* | Amur. |
| 18. | *Ulotricha algerialis* | Algiers. |
| 19. | *Pionea ferrealis* | Amur. |
| 20. | *Evergestis lichenalis* | Central Asia. |
| 21. | *Talis pallidalis* | Turkestan. |
| 22. | *Phlyctænodes stramineralis* | Asia Minor. |
| 23. | *Diptychophora strigatalis* | Amur. |
| 24. | *Lepidoneura griseralis* | Central Asia. |
| 25. | *Actenia phæalis* | Algiers. |
| 26. | *Pyrausta pachyceralis* | Armenia. |
| 27. | *Diasemia lætalis* | Turkestan. |
| 28. | *Noctuelia arcuatalis* | Central Asia. |
| 29. | *Titanio metaxanthalis* | Central Asia. |
| 30. | *Tabidia strigiferalis* | Amur. |
| 31. | *Pionea albifuscalis* | Turkestan. |
| 32. | *Cledeobia amuralis* | Amur. |

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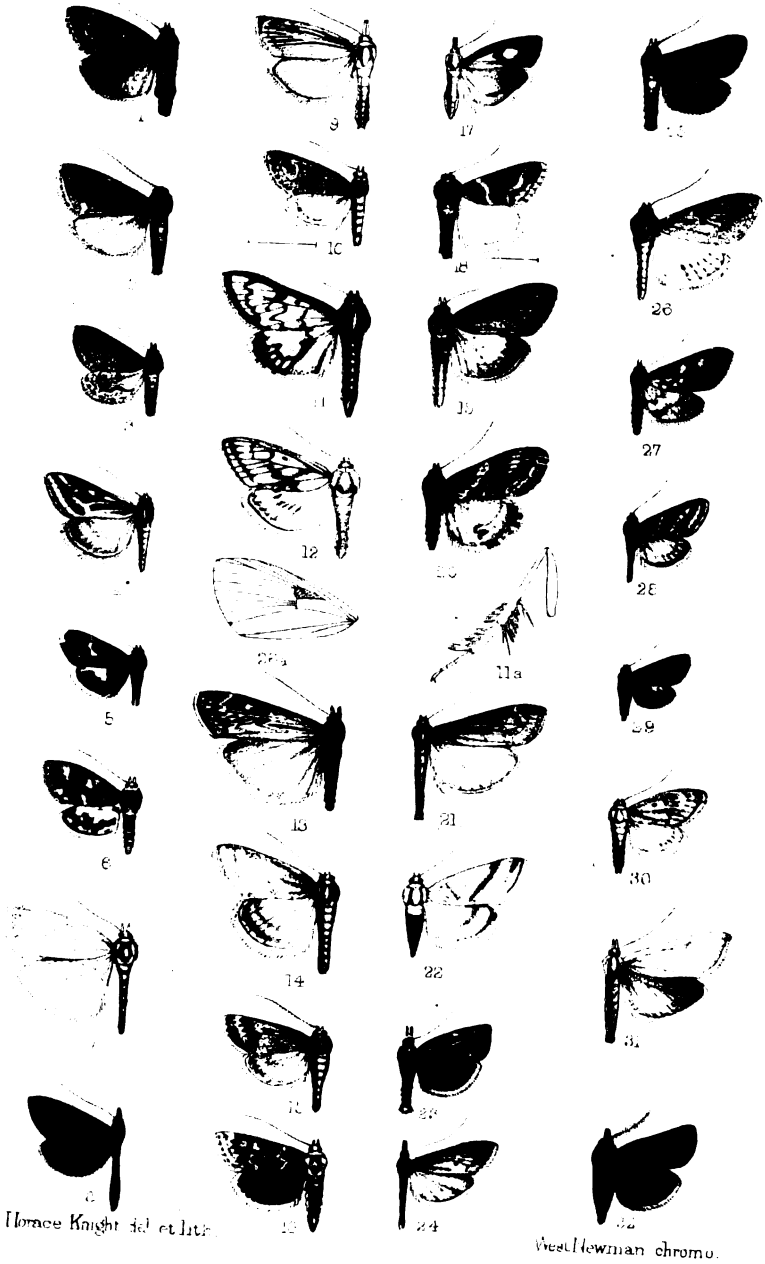


PALÆARCTIC PYRALIDÆ.

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## Explanation of Plate V.

Illustrating Mr. Ambrose Quail's paper on "Life Histories, etc., in the Hepialid Group of Lepidoptera."

Fig. 1. *Gorgopis bacotii*, sp. n. ♂.
2. *Trictena labyrinthica.* Wing neuration.
3. *Porina fuscomaculata.* " "
4. *Charagia virescens.* Segment of clavola of antenna.
5. *Gorgopis bacotii.* " " "
6. *Porina cervinata.* " " "
7. " *fuscomaculata.* " " "
8. *Hectomanes fusca.* " " "
8*a*. Outline of the same in transverse section.
9. *Trictena labyrinthica.* Segment of clavola.
9*a*. Outline of the same in transverse section.
10. *Porina cervinata.* Head of newly-hatched larva enlarged.
11. " " Thoracic segment " " "
12. " " Third abdominal segment of same.
13. " " Ninth and tenth abdominal segments of same.
14. " " Tubercle seta enlarged.
15. " " Side view of larva 135 days old.
16. " " Dorsal view of anterior segments of larva 135 days old.
17. " " Prothorax, showing scutellar hairs, of larva 195 days old.
18. " " Abdominal feet, hooks, and setæ of larva 226 days old.
19. " " Anal claspers of larva 226 days old.
20. " " Posterior segments of pupa.
21. " " Anterior " "
22. *Charagia virescens.* Prothorax of half-grown larva.
23. " " Third abdominal segment of half-grown larva.

Figs. 1–3, nat. size; 4–9*a* enlarged about 200 diameters; 15–23 enlarged 4 × 4.

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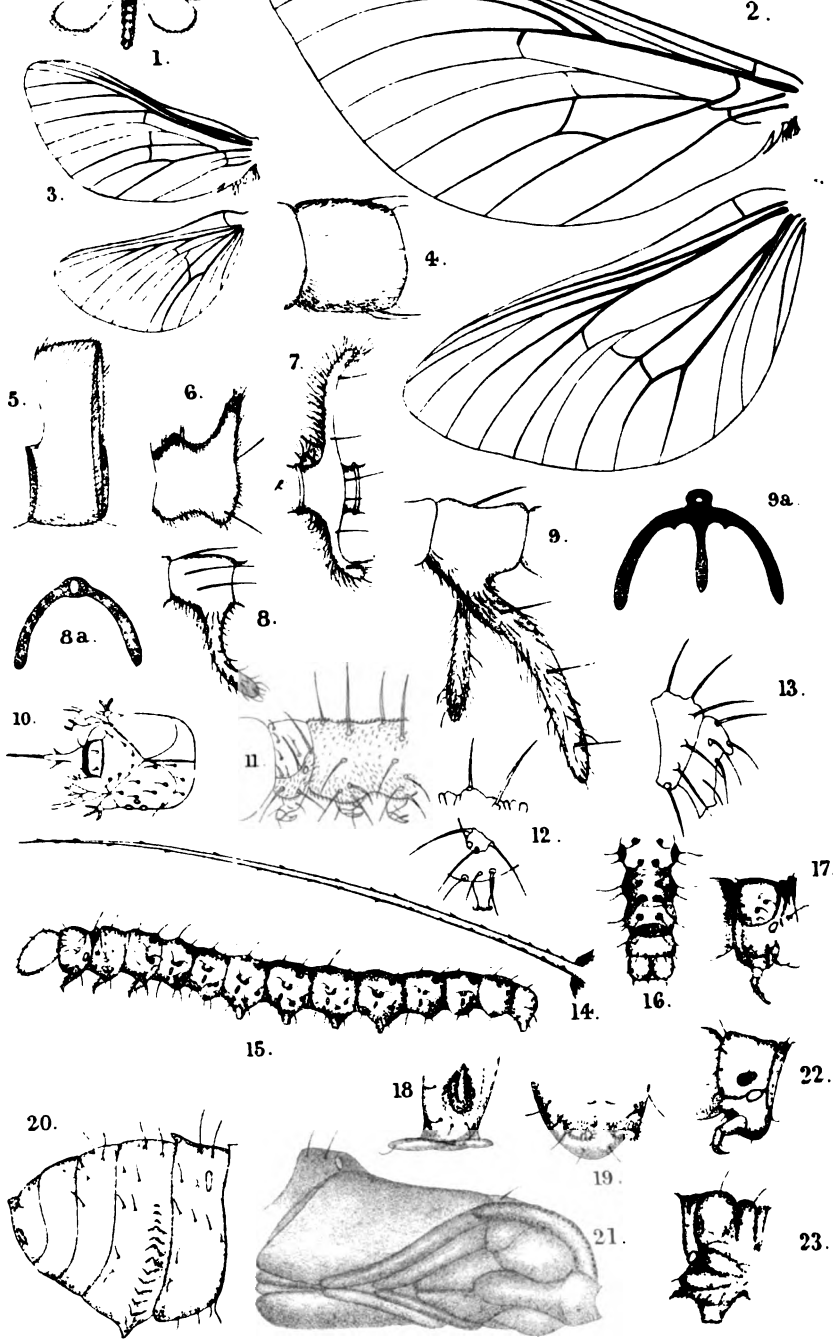


Ambrose Quail del
R E Mintern lith

Hepialidæ.

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## Explanation of Plate VI.

Illustrating Mr. Ambrose Quail's paper on "Life Histories, etc., in the Hepialid Group of Lepidoptera."

Fig. A 1–7. Wing scales of *Porina* :—1, Surface scale of *P. umbraculata;* 2—3, of *P. signata;* 4, of *P. cervinata;* 6, *of P. fuscomaculata;* 5 and 7, fringe scales.

B 1–6. Wing scales of *Charagia* :—1, Surface scale of fore wing of *C. virescens;* 2, of hind wing; 3 and 4, damaged surface scales; 5, fringe scale of *C. virescens;* 6, damaged fringe scale of *C. lignivorus.*

C 1. Surface scale of *Hepialis humuli.*

C 2–3. Surface and fringe scales of *Trictena labyrinthica.*

D 1–4. Wing scales of *Hectomanes:* 1, Surface scale of *H. simulans;* 2, 3, of *H. polyspila;* 4, fringe scale.

E 1–9. Wing scales of *Gorgopis* :—1, 2, Surface scales, and 3, fringe scale of *G. bacotii;* 4—8, surface scales, and 9, fringe scale of *G. libania.*

The figures are enlarged 200 diameters.

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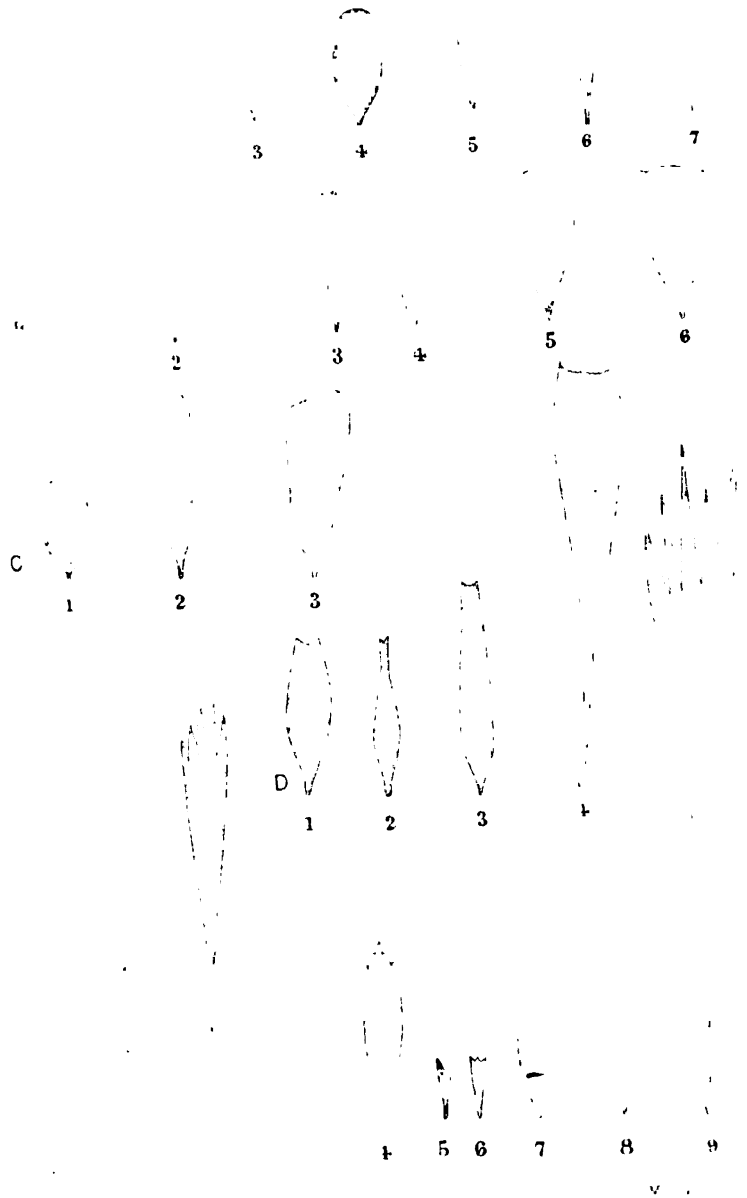


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## Explanation of Plate [illegible]

Illustrating Mr. Ambrose Quail's paper on "[illegible] the Hepialid Group of Lepid[illegible]

Fig. A 1-7. Wing scales of *Porina*:—1, [illegible] *umbraculata*; 2—3, of *P.* [illegible] *vinata*; 6, of *P. fuscomaculata*; [illegible] scales.

B 1-6. Wing scales of *Charagia*:—1, Surface [illegible] wing of *C. virescens*; 2, of hind w[illegible] damaged surface scales; 5, fringe [illegible] *virescens*; 6, damaged fringe scale of *C. [illegible]*.

C 1. Surface scale of *Hepialis humuli*.

C 2 3 Surface and fringe scales of *Trichocera labyrinthica*.

D 1 4. Wing scales of *Hectomanes*: 1, Surface scale of *H. simulans*; 2, 3, of *H. polyspila*; 4, fringe scale.

E 1 9. Wing scales of *Gorgopis*:—1, 2, Surface scales, [illegible] 3, fringe scale of *G. bucotii*; 4—8, surface [illegible] and 9, fringe scale of *G. libania*.

The figures are enlarged 200 diameters.

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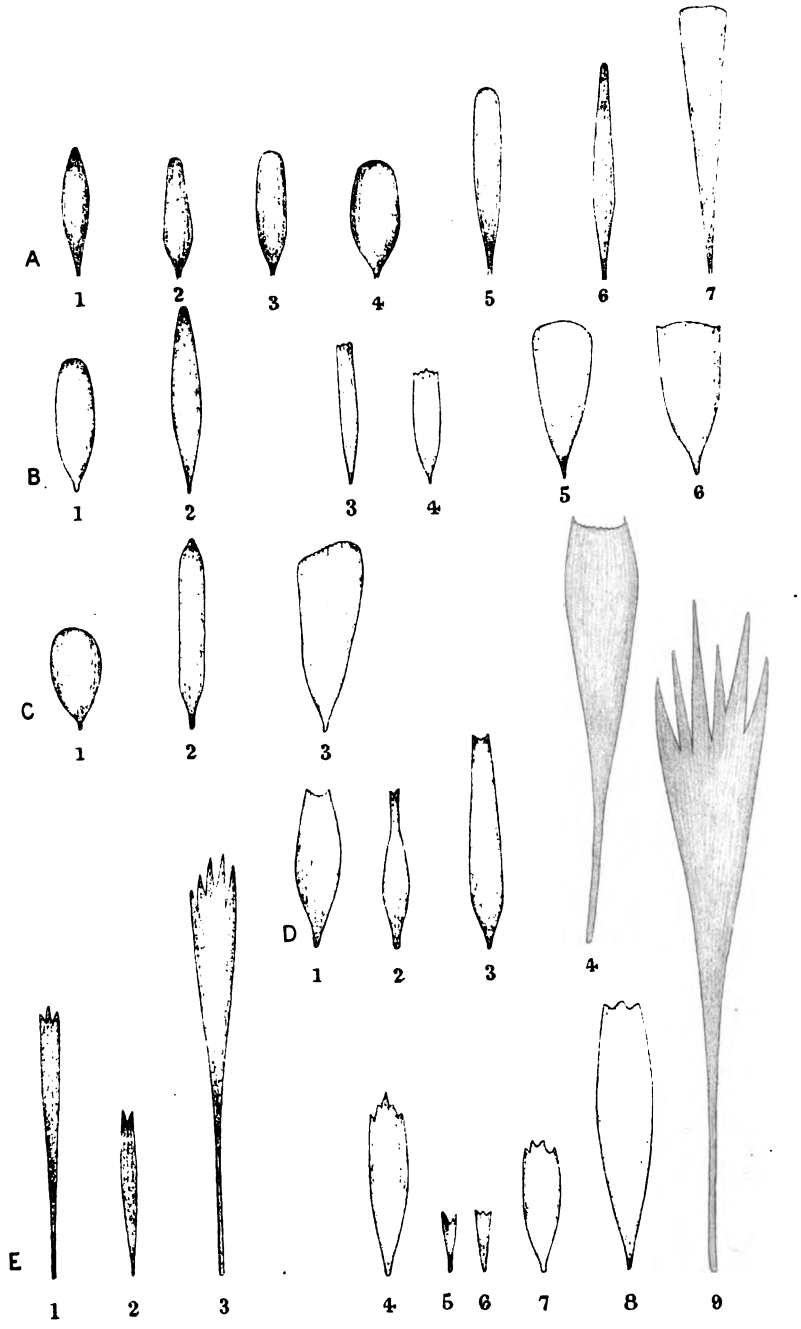


Ambrose Quail del

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Wing Scales of Hepialidæ.

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## Explanation of Plate VII.

Illustrating Mr. C. J. Gahan's paper on "Stridulating organs in Coleoptera."

| | | |
|---|---|---|
| Fig. 1–1*a*. | *Blethisa multipunctata.* | Apex of abdomen, and left elytron (underside). |
| 2–2*b*. | *Spilispa imperialis*, ♂ | Showing striated area on head; the striated area greatly enlarged; and middle of anterior margin of pronotum. |
| 3–3*a*. | *Hispopria foveicollis.* | Showing parts as in figs. 2 and 2*a*. |
| 4–4*a*. | *Anisodera scutellata.* | " " |
| 5–5*a*. | *Eupterus*, sp. ♂ | Apex of abdomen and left elytron. |
| 6–6*a*. | " " ♀ | " " |
| 6*b*. | " " " | One of the pygidial tubercles. |
| 7–7*a*. | *Phonapate nitidipennis*, ♀ | Head, prothorax, and (7*a*) front leg. |
| 8–8*a*. | *Cacicus americanus*, and right hind femur. | |
| 9–9*a*. | *Scolytus destructor.* | Head (underside) and striated area. |
| 10–10*a*. | *Scolytus intricatus.* | " " |
| 11–11*a*. | *Priobium castaneum.* | " " |
| 12–12*a*. | *Cryptorrhynchus lyrinus*, ♀ | Apex of abdomen and left elytron. |
| 12*b*. | " " " | Triangular area of pygidium greatly enlarged. |
| 13–13*b*. | *Camptorrhinus*, sp. ♀. | Parts as in figs. 12–12*b*. |
| 14–14*a*. | *Clythra wahlbergi.* | Showing stridulating areas on the mesonotum. |

Fig. 8, nat. size, the remaining figures all enlarged.

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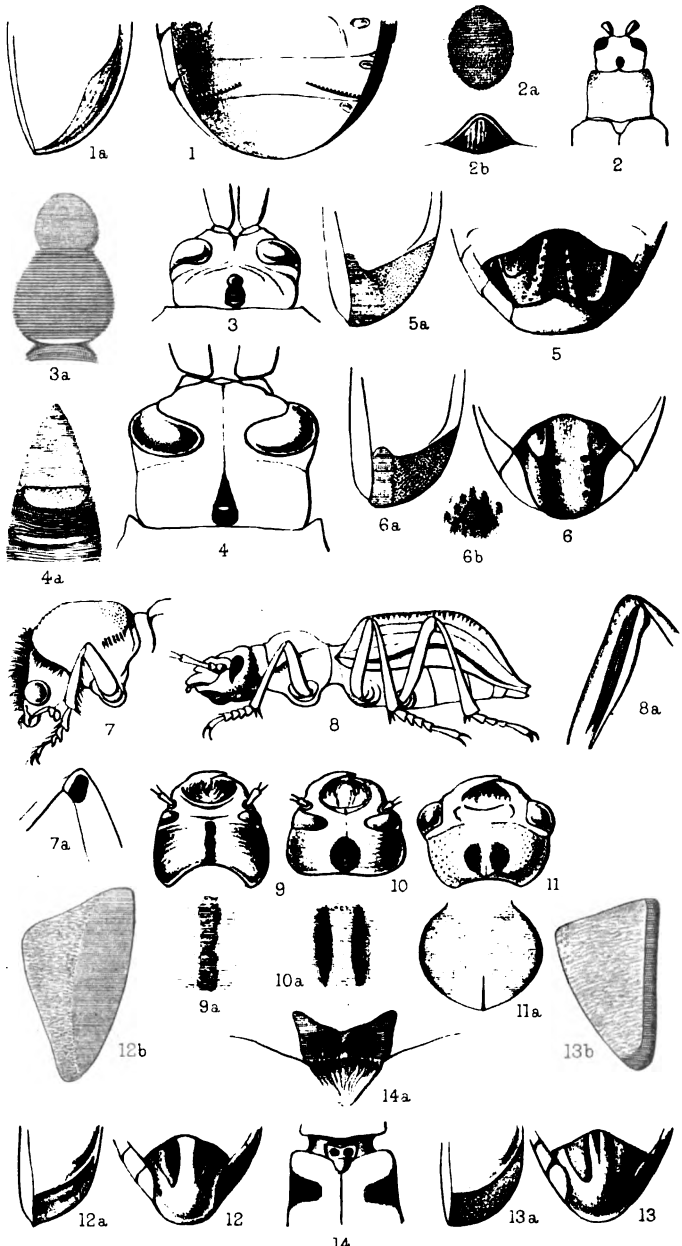


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STRIDULATING ORGANS OF COLEOPTERA.

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## Explanation of Plate VIII.

Illustrating Dr. T. A. Chapman's "Note on the habits and structure of *Acanthopsyche opacella*, H.-Sch."

Fig. 1. Shows disposition of ♂ when pairing, except that wings are raised instead of depressed in order to show legs. The head is a trifle thrown back by the changed position of the wings.

„ 2. Female, latero-dorsal view.

„ 3. Female sac opened during pairing, from a specimen in glycerine. The glycerine has caused some shrinkage of the ♀.

„ 4. Attempt to show the cremastsal-cocoon silk in ♀ sac with its valvular arrangement.

„ 5. Diagram of tracheæ of anterior wing some days before emergence of moth, from camera sketches.

Figs. 1—4 are amplified about 4 diameters.

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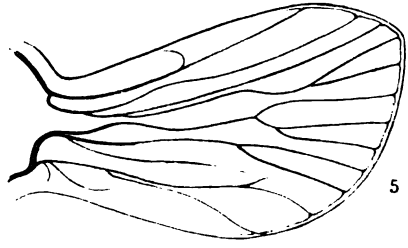


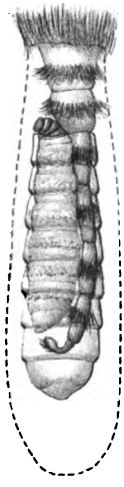


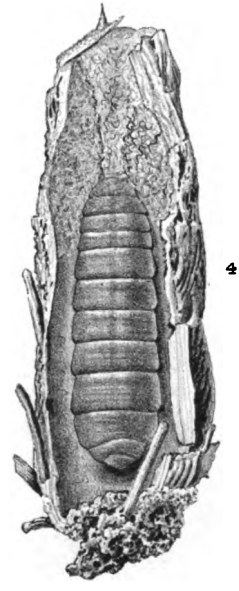


E.C.Knight del.ad.nat. West,Newman lith.

ACANTHOPSYCHE OPACELLA, *HSch.*

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## Explanation of Plate IX.

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Illustrating Mr. W. L. Distant's "Contributions to a Knowledge of the Rhynchota."

Fig. 1. *Cosmoscarta naiteara*, sp. n.
2. „ *roborea*, sp. n.
3. „ *solivaga*, sp. n.
4. „ *chersonesia*, sp. n.
5. „ *mandaru*, sp. n.
6. „ *demonstrata*, sp. n.
7. „ *mandarina*, sp. n.
8. „ *ophir*, sp. n.
9. *Phymatostetha nangla*, sp. n.
10. „ *sema*, sp. n.
11. „ *rengma*, sp. n.
12. „ *karenia*, sp. n.

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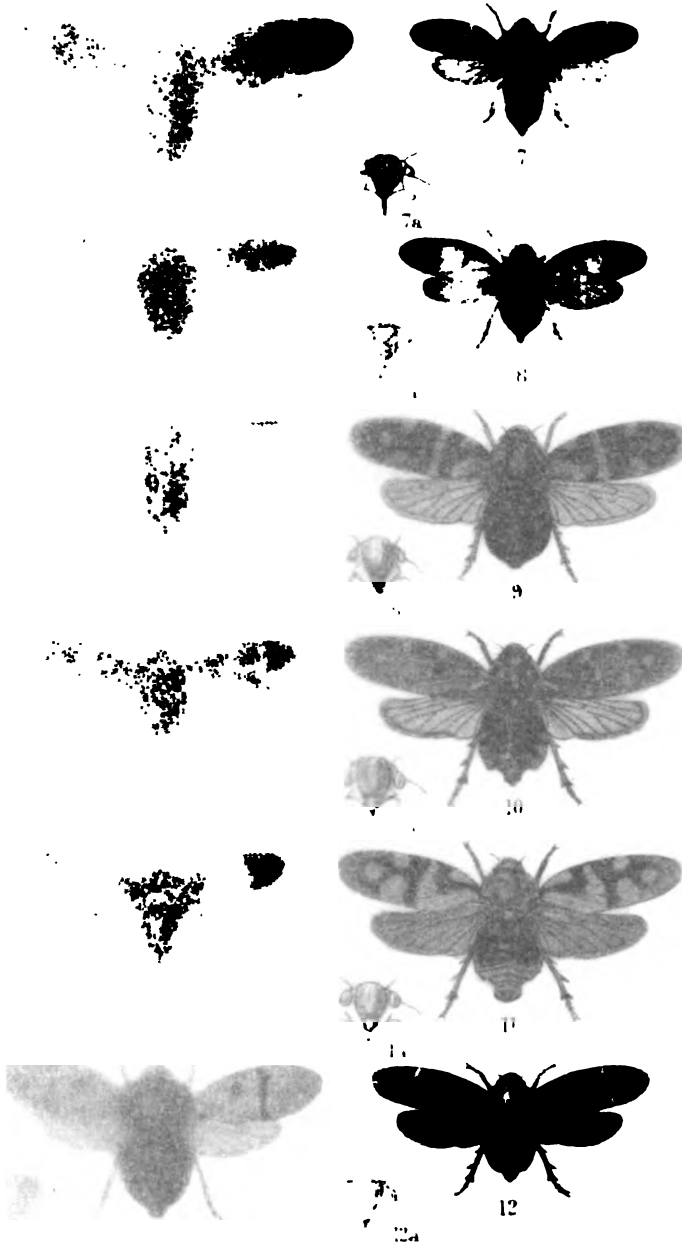


Horace Knight del. et lith. Mintern Bros. Chromo.

New Eastern Cercopidæ.

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## EXPLANATION

Illustrating Mr. W. L. Di[illegible]
of the [illegible]

Fig. 1. *Cosmoscor[illegible]*
2. „
3.
4. „
5. „
6. „
7. „
8. „
9. *Phymatost[illegible]*
10. „
11. „
12. „

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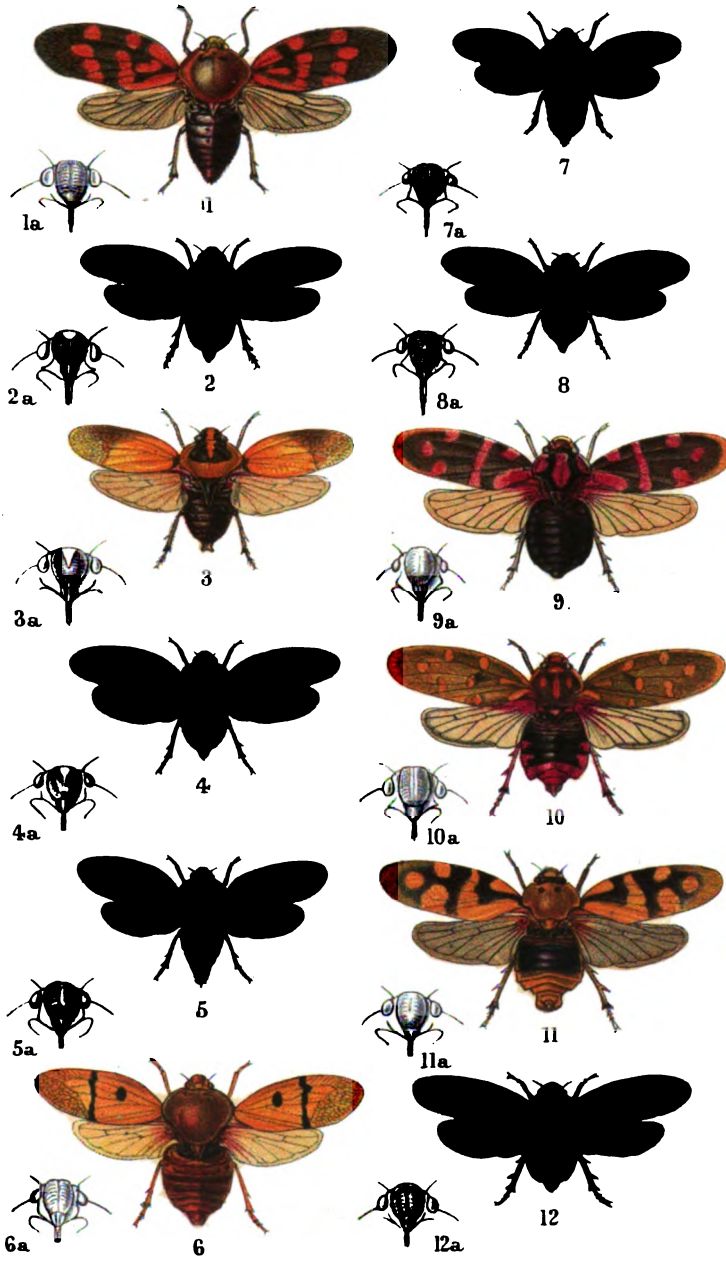


Horace Knight del. et lith.

Mintern Bros Chromo.

New Eastern Cercopidæ.

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## Explanation of Plate X.

Illustrating Dr. T. A. Chapman's exhibits, etc., referred to in the Proceedings, pp. xxiii—xxv.

Fig. 1. Pupal wing-case of *Aporia cratægi*. The hollow at apex is the result of an accidental fracture, a portion being lost.

2. Wing of imago, removed from beneath 1. Being semifluid it is enlarged and distorted (both photos are to same scale). The pale markings here correspond to dark parts of 1. There is really no difference in colour, but the parts beneath the black of the pupa are more delicate and transparent.

3. *Porthetria dispar*, third pair of larval legs, the left one damaged at last larval moult.

4. *Porthetria dispar*, legs of imago corresponding to 3.

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1

2

3

4

West, Newman photo.

*A. CRATÆGI*, PUPAL WING.

*L. DISPAR*, REGENERATED LEG.

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## Explanation of Plate X.

Illustrating Dr. T. A. Chapman's exhibits, etc., referred to at [illegible] Proceedings, pp. xxiii—xxv.

Fig. 1. Pupal wing-case of *Aporia crataegi*. The hollow at apex [illegible] the result of an accidental fracture, a portion being [illegible]

2. Wing of imago, removed from beneath 1. Being semi-[illegible] it is enlarged and distorted [illegible] photos are to same scale). The pale markings here correspond to dark parts of 1. There is really no difference in colour, but the parts beneath the black of the pupa are more delicate and transparent.

[illegible] *dispar*, third pair of larval legs, the left one [illegible] at last larval moult.

[illegible] *dispar*, legs of imago corresponding to 3.

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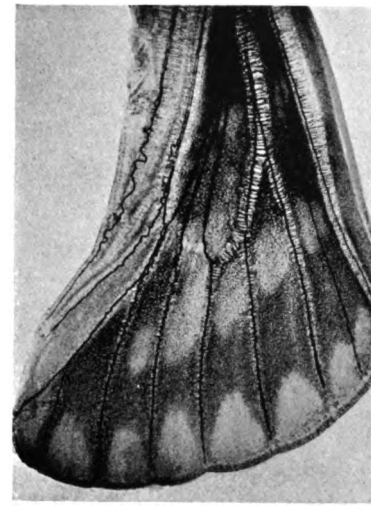
1



2

3

4

West, Newman photo.

*A. CRATÆGI*, PUPAL WING.

*L. DISPAR*, REGENERATED LEG.

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## Founded, 1833. Incorporated by Royal Charter, 1885.

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### *NOTICE TO AUTHORS, etc.*

*Authors of papers which are intended to be communicated to the Society, are requested to be good enough to send their names and the full titles of their papers to the Secretaries at least fourteen days prior to the date of the Meeting at which it is proposed that such papers shall be read; and such communications may be addressed to the Secretaries at the Society's Rooms,* 11 *Chandos Street, Cavendish Square, W., or to* H. Goss, *The Avenue, Surbiton Hill, Kingston-on-Thames.*

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## NOTICE.

All persons exhibiting specimens at Meetings of the Society are requested to be good enough to hand to the Secretary, **at the Meeting**, a note in writing of the generic and specific names of all specimens exhibited, together with the names of the localities in which such specimens were obtained, and any remarks thereon which the exhibitors have to make. In the absence of such a note in writing the Secretary will not be responsible for any errors in connexion with his report of such exhibitions, or for the entire omission of any reference thereto in the Proceedings.

By Order of the Council.

## MEETINGS

OF THE

## ENTOMOLOGICAL SOCIETY OF LONDON,

11 Chandos Street, Cavendish Square, W.

FOR THE

### Session 1901–1902.

| | | |
|---|---|---|
| Wednesday, | February ... ... ... ... ... | 6 |
| ,, | March ... ... ... ... ... | 6 |
| ,, | ,, ... ... ... ... ... | 20 |
| ,, | April ... ... ... ... ... | 3 |
| ,, | May ... ... ... ... ... | 1 |
| ,, | June ... ... ... ... ... | 5 |
| ,, | October ... ... ... ... ... | 2 |
| ,, | ,, ... ... ... ... ... | 16 |
| ,, | November ... ... ... ... ... | 6 |
| ,, | ,, ... ... ... ... ... | 20 |
| ,, | December ... ... ... ... ... | 4 |
| | 1902. | |
| ,, | January (Annual Meeting) ... ... ... | 15 |

The Chair will be taken at Eight o'clock in the evening precisely.

**Fellows are reminded that the Subscription for 1901 was due on the 1st January. They will save much trouble by forwarding it to the Treasurer promptly.**

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